Computer algebra independent integration tests

3-Logarithms/3.2.2-f+g-x-^m-h+i-x-^q-A+B-log-e-a+b-x-over-c+d-x-^n-^p

Nasser M. Abbasi

June 29, 2021 Compiled on June 29, 2021 at 3:31pm

Contents

Chapter 1

Introduction

This report gives the result of running the computer algebra independent integration problems. The listing of the problems are maintained by and can be downloaded from `https://rulebasedintegration.org`

The number of integrals in this report is [263]. This is test number [60].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

1. Mathematica 12.3 (64 bit) on windows 10.
2. Rubi 4.16.1 in Mathematica 12.1 on windows 10.
3. Maple 2021.1 (64 bit) on windows 10.
4. Maxima 5.44 on Linux. (via sagemath 9.3)
5. Fricas 1.3.7 on Linux (via sagemath 9.3)
6. Giac/Xcas 1.7 on Linux. (via sagemath 9.3)
7. Sympy 1.8 under Python 3.8.8 using Anaconda distribution on Ubuntu.
8. Mupad using Matlab 2021a with Symbolic Math Toolbox Version 8.7 under windows 10 (64 bit)

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

Sympy was called directly using Python.

1.2 Results

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

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

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

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

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

System	solved	Failed
Rubi	% 94.68 (249)	% 5.32 (14)
Mathematica	% 94.68 (249)	% 5.32 (14)
Maple	% 37.26 (98)	% 62.74 (165)
Maxima	% 68.06 (179)	% 31.94 (84)
Fricas	% 59.32 (156)	% 40.68 (107)
Sympy	% 19.01 (50)	% 80.99 (213)
Giac	% 33.46 (88)	% 66.54 (175)
Mupad	% 48.29 (127)	% 51.71 (136)

Table 1.1: Percentage solved for each CAS

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

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

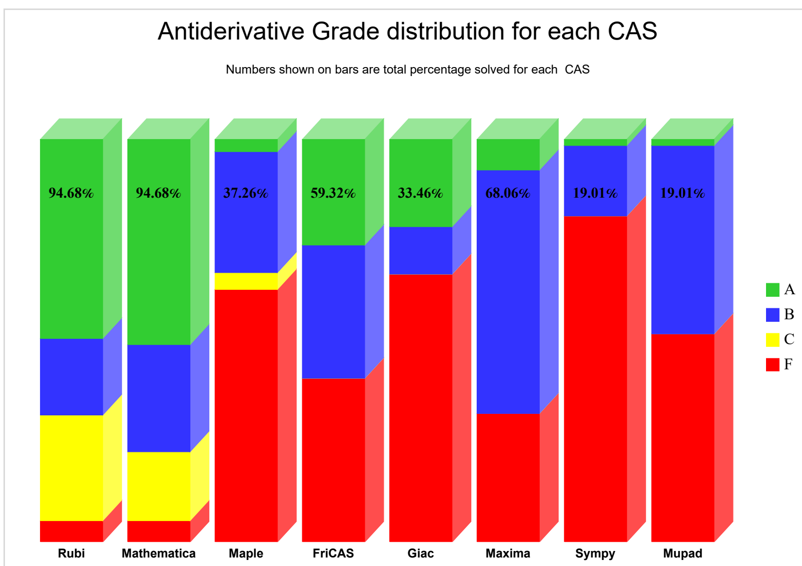
Table 1.2: Description of grading applied to integration result

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

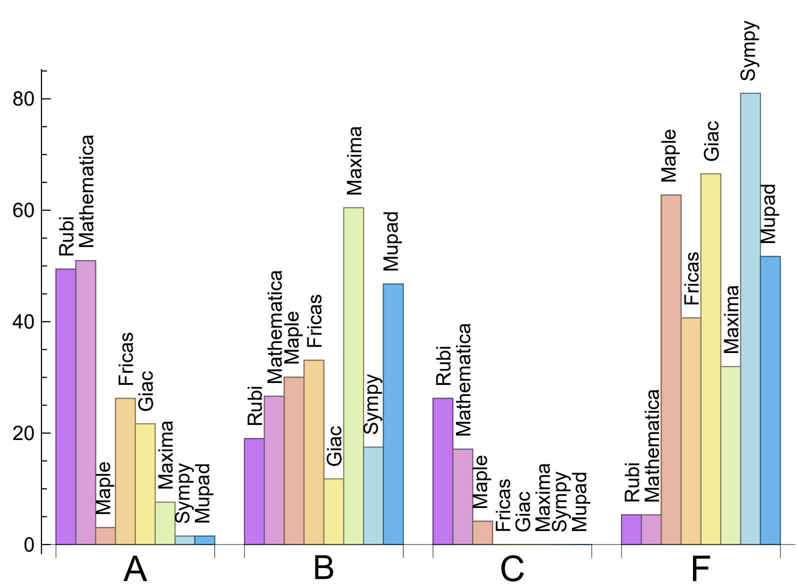
System	% A grade	% B grade	% C grade	% F grade
Rubi	49.43	19.01	26.24	5.32
Mathematica	50.95	26.62	17.11	5.32
Maple	3.04	30.04	4.18	62.74
Maxima	7.60	60.46	0.00	31.94
Fricas	26.24	33.08	0.00	40.68
Sympy	1.52	17.49	0.00	80.99
Giac	21.67	11.79	0.00	66.54
Mupad	1.52	46.77	0.00	51.71

Table 1.3: Antiderivative Grade distribution of each CAS

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



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



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

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

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

System	Number failed	Percentage normal failure	Percentage timeout failure	Percentage exception failure
Rubi	14	100.00 %	0.00 %	0.00 %
Mathematica	14	100.00 %	0.00 %	0.00 %
Maple	165	96.97 %	3.03 %	0.00 %
Maxima	84	98.81 %	1.19 %	0.00 %
Fricas	107	100.00 %	0.00 %	0.00 %
Sympy	213	13.15 %	84.98 %	1.88 %
Giac	175	18.29 %	80.57 %	1.14 %
Mupad	136	100.00 %	0.00 %	0.00 %

Table 1.4: Time and leaf size performance for each CAS

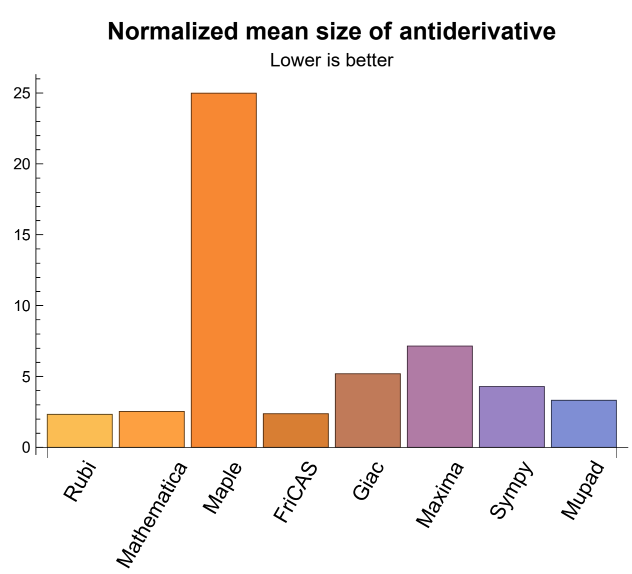
1.3 Performance

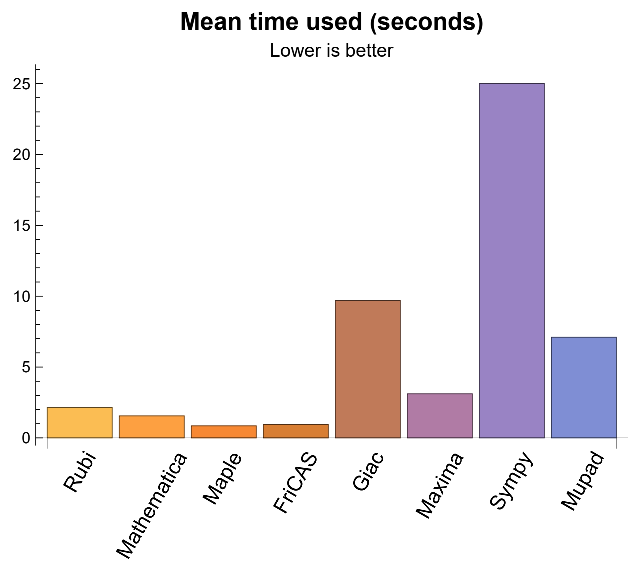
The table below summarizes the performance of each CAS system in terms of CPU time and leaf size of results.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	2.14	697.39	2.33	462.00	1.60
Mathematica	1.55	871.57	2.53	362.00	1.26
Maple	0.85	2692.94	24.99	1456.00	6.25
Maxima	3.11	2183.64	7.15	1386.00	4.82
Fricas	0.94	657.82	2.37	438.00	2.08
Sympy	25.01	1002.40	4.28	850.00	4.29
Giac	9.70	1237.65	5.19	344.50	1.49
Mupad	7.11	1046.72	3.33	638.00	2.70

Table 1.5: Time and leaf size performance for each CAS

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





1.4 list of integrals that has no closed form antiderivative

{253, 254, 262, 263}

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

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi {}

Mathematica {}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

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

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

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

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

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

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

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

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

```
'besselexpand : true'
'display2d : false'
'domain : complex'
'keepfloat : true'
```

```
'load(to_poly_solve)'
'load(simplify_sum)'
'load(abs_integrate)' 'load(diag)'
```

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

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

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

1.9.2 Important note about FriCAS and Giac/XCAS results

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

These will fail With error `Exception raised: NotImplementedError`

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

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

1.9.3 Important note about finding leaf size of antiderivative

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

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

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

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

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

  except Exception as ee:
        leafCount =1
```

1.9.4 Important note about Mupad results

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

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

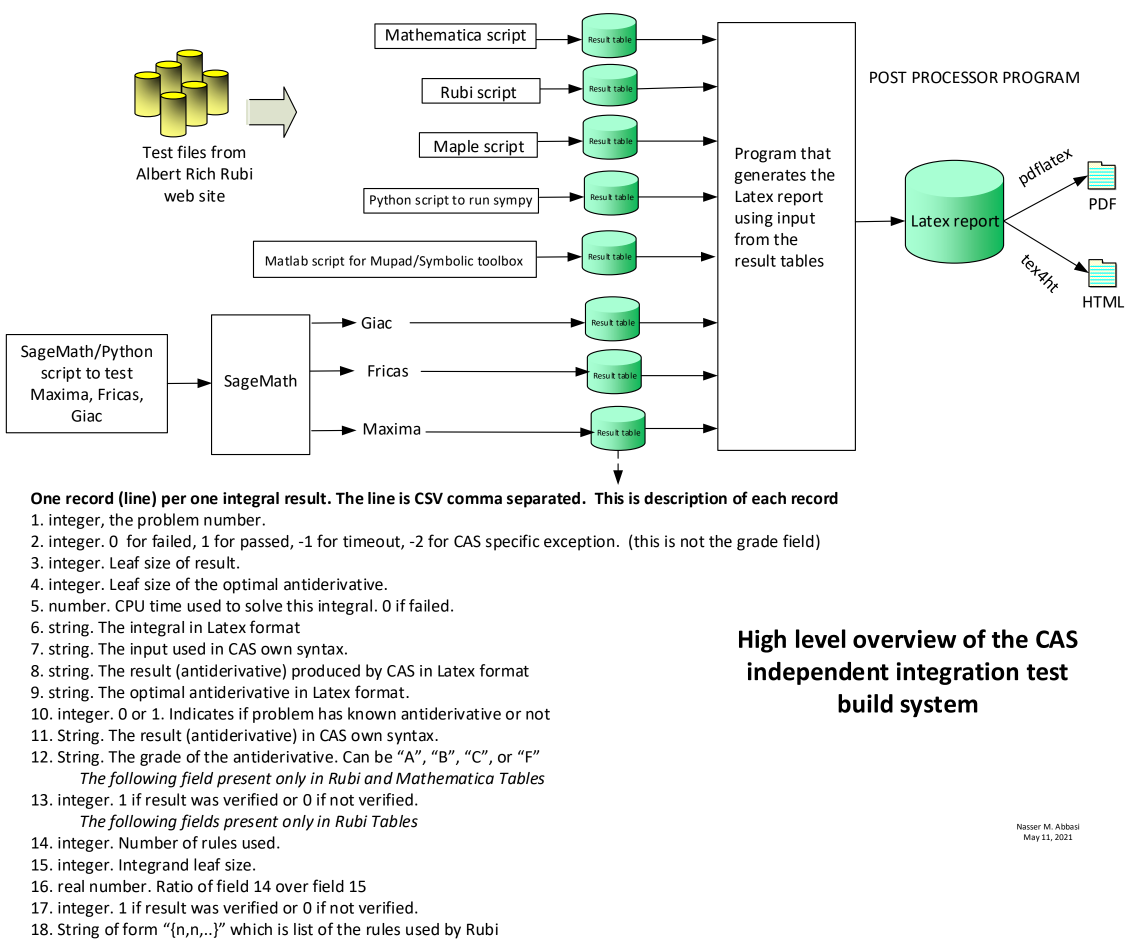
The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

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

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

1.10 Design of the test system

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



Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

A grade: { 1, 2, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 30, 31, 32, 33, 34, 39, 40, 41, 42, 47, 48, 50, 55, 56, 58, 64, 65, 66, 67, 74, 75, 76, 77, 108, 109, 111, 112, 113, 115, 116, 117, 118, 119, 120, 121, 122, 123, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 143, 144, 145, 146, 151, 152, 154, 159, 160, 162, 168, 169, 170, 171, 178, 179, 180, 181, 214, 220, 224, 225, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 251, 252, 253, 254, 255, 256, 257, 258, 260, 261, 262, 263 }

B grade: { 3, 7, 17, 28, 29, 49, 57, 59, 60, 68, 69, 70, 78, 79, 80, 84, 85, 86, 87, 92, 93, 94, 100, 101, 110, 114, 124, 153, 161, 163, 164, 172, 173, 174, 182, 183, 184, 185, 186, 187, 188, 189, 194, 195, 196, 202, 203, 249, 250, 259 }

C grade: { 35, 36, 37, 38, 43, 44, 45, 46, 51, 52, 53, 54, 61, 62, 63, 71, 72, 73, 81, 82, 83, 88, 89, 90, 91, 95, 96, 97, 98, 99, 102, 103, 104, 105, 106, 107, 139, 140, 141, 142, 147, 148, 149, 150, 155, 156, 157, 158, 165, 166, 167, 175, 176, 177, 190, 191, 192, 193, 197, 198, 199, 200, 201, 204, 205, 206, 207, 208, 209 }

F grade: { 210, 211, 212, 213, 215, 216, 217, 218, 219, 221, 222, 223, 226, 227 }

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 27, 31, 32, 33, 34, 39, 40, 41, 42, 47, 48, 50, 55, 56, 58, 65, 66, 67, 75, 76, 77, 87, 88, 89, 90, 91, 96, 97, 98, 99, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 115, 116, 117, 118, 119, 120, 121, 122, 123, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 143, 144, 145, 146, 151, 152, 154, 159, 160, 162, 169, 170, 171, 179, 180, 181, 190, 212, 213, 214, 218, 219, 220, 224, 225, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 241, 242, 243, 244, 245, 246, 247, 248, 253, 254, 262, 263 }

B grade: { 7, 17, 18, 28, 29, 30, 49, 57, 59, 60, 64, 68, 69, 70, 74, 78, 79, 80, 84, 85, 86, 92, 93, 94, 100, 101, 114, 124, 125, 153, 161, 163, 164, 168, 172, 173, 174, 178, 182, 183, 184, 185, 186, 187, 188, 189, 191, 192, 193, 194, 195, 196, 198, 199, 200, 201, 202, 203, 206, 207, 208, 209, 251, 252, 255, 256, 257, 258, 260, 261 }

C grade: { 35, 36, 37, 38, 43, 44, 45, 46, 51, 52, 53, 54, 61, 62, 63, 71, 72, 73, 81, 82, 83, 95, 102, 103, 139, 140, 141, 142, 147, 148, 149, 150, 155, 156, 157, 158, 165, 166, 167, 175, 176, 177, 197, 204, 205 }

F grade: { 210, 211, 215, 216, 217, 221, 222, 223, 226, 227, 240, 249, 250, 259 }

2.1.3 Maple

A grade: { 253, 254, 255, 256, 257, 258, 262, 263 }

B grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 61, 62, 63, 71, 72, 73, 81, 82, 83, 87, 88, 89, 90, 91, 95, 96, 97, 98, 99, 102, 103, 104, 105, 106, 107 }

C grade: { 228, 229, 230, 231, 232, 233, 237, 238, 239, 252, 261 }

F grade: { 55, 56, 57, 58, 59, 60, 64, 65, 66, 67, 68, 69, 70, 74, 75, 76, 77, 78, 79, 80, 84, 85, 86, 92, 93, 94, 100, 101, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 234, 235, 236, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 259, 260 }

2.1.4 Maxima

A grade: { 4, 5, 14, 33, 42, 50, 111, 112, 146, 154, 231, 232, 237, 238, 239, 245, 253, 254, 262, 263 }

B grade: { 1, 2, 3, 7, 8, 9, 10, 11, 12, 13, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, 32, 35, 36, 37, 38, 39, 40, 43, 44, 45, 46, 47, 49, 51, 52, 53, 54, 55, 56, 57, 58, 61, 62, 63, 64, 65, 66, 67, 71, 72, 73, 74, 75, 76, 77, 81, 82, 88, 89, 90, 91, 95, 96, 97, 98, 99, 102, 103, 104, 105, 106, 107, 108, 109, 110, 114, 115, 116, 117, 118, 119, 120, 121, 122, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 135, 136, 137, 139, 140, 141, 142, 143, 144, 147, 148, 149, 150, 151, 153, 155, 156, 157, 158, 159, 160, 161, 162, 165, 166, 167, 168, 169, 170, 171, 175, 176, 177, 178, 179, 180, 181, 190, 191, 192, 193, 197, 198, 199, 200, 201, 204, 205, 206, 207, 208, 209, 228, 229, 230, 233, 255, 256, 257, 258 }

C grade: { }

F grade: { 6, 16, 27, 34, 41, 48, 59, 60, 68, 69, 70, 78, 79, 80, 83, 84, 85, 86, 87, 92, 93, 94, 100, 101, 113, 123, 134, 138, 145, 152, 163, 164, 172, 173, 174, 182, 183, 184, 185, 186, 187, 188, 189, 194, 195, 196, 202, 203, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 234, 235, 236, 240, 241, 242, 243, 244, 246, 247, 248, 249, 250, 251, 252, 259, 260, 261 }

2.1.5 FriCAS

A grade: { 3, 4, 10, 11, 12, 22, 35, 36, 37, 38, 42, 43, 44, 45, 50, 51, 52, 89, 90, 91, 95, 96, 97, 98, 103, 104, 105, 139, 140, 141, 146, 147, 148, 154, 155, 197, 198, 215, 216, 220, 221, 222, 224, 225, 230, 231, 232, 234, 235, 236, 237, 238, 239, 241, 242, 243, 244, 245, 246, 247, 248, 253, 254, 255, 256, 257, 258, 262, 263 }

B grade: { 1, 2, 7, 8, 9, 13, 17, 18, 19, 20, 21, 23, 28, 29, 30, 46, 49, 53, 54, 61, 62, 63, 71, 72, 73, 81, 82, 83, 88, 99, 102, 106, 107, 108, 109, 110, 111, 114, 115, 116, 117, 118, 119, 120, 124, 125, 126, 127, 128, 129, 130, 142, 149, 150, 153, 156, 157, 158, 165, 166, 167, 175, 176, 177, 190, 191, 192, 193, 199, 200, 201, 204, 205, 206, 207, 208, 209, 212, 213, 214, 217, 218, 219, 223, 228, 229, 233 }

C grade: { }

F grade: { 5, 6, 14, 15, 16, 24, 25, 26, 27, 31, 32, 33, 34, 39, 40, 41, 47, 48, 55, 56, 57, 58, 59, 60, 64, 65, 66, 67, 68, 69, 70, 74, 75, 76, 77, 78, 79, 80, 84, 85, 86, 87, 92, 93, 94, 100, 101, 112, 113, 121, 122, 123, 131, 132, 133, 134, 135, 136, 137, 138, 143, 144, 145, 151, 152, 159, 160, 161, 162, 163, 164, 168, 169, 170, 171, 172, 173, 174, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 194, 195, 196, 202, 203, 210, 211, 226, 227, 240, 249, 250, 251, 252, 259, 260, 261 }

2.1.6 Sympy

A grade: { 110, 111, 120, 245 }

B grade: { 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 17, 18, 19, 20, 21, 22, 23, 35, 36, 37, 38, 42, 43, 44, 45, 49, 50, 51, 52, 53, 61, 62, 71, 72, 88, 89, 90, 91, 95, 96, 97, 102, 103, 104, 106 }

C grade: { }

F grade: { 5, 6, 14, 15, 16, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 39, 40, 41, 46, 47, 48, 54, 55, 56, 57, 58, 59, 60, 63, 64, 65, 66, 67, 68, 69, 70, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 92, 93, 94, 98, 99, 100, 101, 105, 107, 108, 109, 112, 113, 114, 115, 116, 117, 118, 119, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263 }

2.1.7 Giac

A grade: { 7, 8, 9, 17, 18, 19, 28, 29, 30, 42, 43, 49, 50, 51, 61, 62, 63, 71, 72, 73, 81, 82, 83, 95, 96, 103, 104, 114, 115, 116, 124, 125, 126, 139, 146, 147, 153, 154, 155, 165, 166, 167, 175, 176, 197, 198, 204, 205, 206, 231, 237, 238, 239, 253, 254, 262, 263 }

B grade: { 1, 2, 3, 4, 10, 11, 12, 13, 20, 21, 22, 23, 35, 88, 102, 108, 109, 110, 111, 117, 118, 119, 120, 127, 128, 129, 130, 190, 232, 233, 245 }

C grade: { }

F grade: { 5, 6, 14, 15, 16, 24, 25, 26, 27, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 44, 45, 46, 47, 48, 52, 53, 54, 55, 56, 57, 58, 59, 60, 64, 65, 66, 67, 68, 69, 70, 74, 75, 76, 77, 78, 79, 80, 84, 85, 86, 87, 89, 90, 91, 92, 93, 94, 97, 98, 99, 100, 101, 105, 106, 107, 112, 113, 121, 122, 123, 131, 132, 133, 134, 135, 136, 137, 138, 140, 141, 142, 143, 144, 145, 148, 149, 150, 151, 152, 156, 157, 158, 159, 160, 161, 162, 163, 164, 168, 169, 170, 171, 172, 173, 174, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 191, 192, 193, 194, 195, 196, 199, 200, 201, 202, 203, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 234, 235, 236, 240, 241, 242, 243, 244, 246, 247, 248, 249, 250, 251, 252, 255, 256, 257, 258, 259, 260, 261 }

2.1.8 Mupad

A grade: { 253, 254, 262, 263 }

B grade: { 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 17, 18, 19, 20, 21, 22, 23, 28, 29, 30, 35, 36, 37, 38, 42, 43, 44, 45, 46, 49, 50, 51, 52, 53, 54, 61, 62, 63, 71, 72, 73, 81, 82, 83, 88, 89, 90, 91, 95, 96, 97, 98, 99, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 114, 115, 116, 117, 118, 119, 120, 124, 125, 126, 127, 128, 129, 130, 139, 140, 141, 142, 146, 147, 148, 149, 150, 153, 154, 155, 156, 157, 158, 165, 166, 167, 175, 176, 177, 190, 191, 192, 193, 197, 198, 200, 201, 204, 205, 206, 207, 208, 209, 228, 229, 230, 231, 232, 233, 237, 238, 239, 245 }

C grade: { }

F grade: { 5, 6, 14, 15, 16, 24, 25, 26, 27, 31, 32, 33, 34, 39, 40, 41, 47, 48, 55, 56, 57, 58, 59, 60, 64, 65, 66, 67, 68, 69, 70, 74, 75, 76, 77, 78, 79, 80, 84, 85, 86, 87, 92, 93, 94, 100, 101, 112, 113, 121, 122, 123, 131, 132, 133, 134, 135, 136, 137, 138, 143, 144, 145, 151, 152, 159, 160, 161, 162, 163, 164, 168, 169, 170, 171, 172, 173, 174, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 194, 195, 196, 199, 202, 203, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 234, 235, 236, 240, 241, 242, 243, 244, 246, 247, 248, 249, 250, 251, 252, 255, 256, 257, 258, 259, 260, 261 }

2.2 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	232	261	7284	1022	504	1158	5682	1195
normalized size	1	1.09	1.23	34.36	4.82	2.38	5.46	26.80	5.64
time (sec)	N/A	0.345	0.221	0.179	1.391	2.373	7.952	1.590	5.377

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	200	217	4593	671	370	850	3993	638
normalized size	1	1.11	1.21	25.52	3.73	2.06	4.72	22.18	3.54
time (sec)	N/A	0.294	0.159	0.155	1.232	1.047	5.105	1.190	5.113

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	294	181	2407	361	226	498	2404	282
normalized size	1	2.10	1.29	17.19	2.58	1.61	3.56	17.17	2.01
time (sec)	N/A	0.344	0.239	0.145	1.196	0.828	3.151	0.849	4.714

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	70	940	144	127	253	1395	126
normalized size	1	1.00	0.86	11.60	1.78	1.57	3.12	17.22	1.56
time (sec)	N/A	0.057	0.033	0.133	1.099	0.909	1.990	0.668	4.639

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	213	164	1044	241	0	0	0	-1
normalized size	1	1.60	1.23	7.85	1.81	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.353	0.117	0.121	1.840	0.917	0.000	0.000	0.000

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	221	175	1025	0	0	0	0	-1
normalized size	1	1.56	1.23	7.22	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.384	0.153	0.060	0.000	0.871	0.000	0.000	0.000

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	191	208	394	570	177	384	117	197
normalized size	1	2.25	2.45	4.64	6.71	2.08	4.52	1.38	2.32
time (sec)	N/A	0.281	0.153	0.048	1.316	0.764	6.246	1.108	5.576

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	225	187	804	933	363	629	244	361
normalized size	1	1.30	1.08	4.65	5.39	2.10	3.64	1.41	2.09
time (sec)	N/A	0.342	0.394	0.049	1.376	1.078	11.301	1.456	5.866

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	269	257	210	1226	1386	602	928	391	590
normalized size	1	0.96	0.78	4.56	5.15	2.24	3.45	1.45	2.19
time (sec)	N/A	0.390	0.469	0.049	1.797	0.926	18.731	1.438	6.458

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	423	330	429	9298	1789	724	1727	7651	2473
normalized size	1	0.78	1.01	21.98	4.23	1.71	4.08	18.09	5.85
time (sec)	N/A	0.655	0.358	0.193	1.686	1.377	13.453	1.819	5.887

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	337	296	362	6116	1200	534	1266	5571	1287
normalized size	1	0.88	1.07	18.15	3.56	1.58	3.76	16.53	3.82
time (sec)	N/A	0.508	0.252	0.169	1.474	1.067	7.808	1.362	5.342

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	239	200	216	3439	671	367	850	3856	636
normalized size	1	0.84	0.90	14.39	2.81	1.54	3.56	16.13	2.66
time (sec)	N/A	0.341	0.184	0.153	1.254	1.005	5.075	1.061	5.005

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	97	1522	280	223	491	2475	290
normalized size	1	1.00	0.82	12.90	2.37	1.89	4.16	20.97	2.46
time (sec)	N/A	0.067	0.040	0.134	1.102	0.951	2.986	0.835	4.586

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	276	354	252	2538	518	0	0	0	-1
normalized size	1	1.28	0.91	9.20	1.88	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.490	0.190	0.154	1.799	0.976	0.000	0.000	0.000

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	247	313	221	1465	992	0	0	0	-1
normalized size	1	1.27	0.89	5.93	4.02	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.518	0.230	0.142	1.909	0.720	0.000	0.000	0.000

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	338	244	1495	0	0	0	0	-1
normalized size	1	1.47	1.06	6.50	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.589	0.313	0.064	0.000	0.925	0.000	0.000	0.000

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	287	315	406	1515	271	614	114	423
normalized size	1	3.22	3.54	4.56	17.02	3.04	6.90	1.28	4.75
time (sec)	N/A	0.490	0.297	0.048	1.633	0.736	26.252	2.300	6.187

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	325	454	828	2218	510	928	238	647
normalized size	1	1.80	2.51	4.57	12.25	2.82	5.13	1.31	3.57
time (sec)	N/A	0.571	0.383	0.052	2.266	0.731	47.655	2.950	6.859

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	359	344	1262	3029	807	1300	382	941
normalized size	1	1.28	1.22	4.49	10.78	2.87	4.63	1.36	3.35
time (sec)	N/A	0.678	0.865	0.050	3.036	1.121	92.227	3.512	7.993

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	457	416	586	11172	2637	912	2161	10098	4347
normalized size	1	0.91	1.28	24.45	5.77	2.00	4.73	22.10	9.51
time (sec)	N/A	0.945	0.590	0.200	1.840	1.544	18.759	2.575	6.580

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	371	330	429	7597	1789	722	1727	7963	2465
normalized size	1	0.89	1.16	20.48	4.82	1.95	4.65	21.46	6.64
time (sec)	N/A	0.675	0.320	0.176	1.513	1.212	12.214	1.975	6.045

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	271	232	261	4481	1022	502	1158	5710	1192
normalized size	1	0.86	0.96	16.54	3.77	1.85	4.27	21.07	4.40
time (sec)	N/A	0.341	0.197	0.157	1.342	0.956	7.306	1.440	5.438

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	120	2172	439	322	706	3969	566
normalized size	1	1.00	0.81	14.58	2.95	2.16	4.74	26.64	3.80
time (sec)	N/A	0.081	0.058	0.142	1.145	0.797	4.124	1.091	4.797

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	356	436	352	4594	850	0	0	0	-1
normalized size	1	1.22	0.99	12.90	2.39	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.602	0.275	0.164	1.846	0.927	0.000	0.000	0.000

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	373	521	374	3141	1501	0	0	0	-1
normalized size	1	1.40	1.00	8.42	4.02	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.696	0.391	0.147	1.837	0.622	0.000	0.000	0.000

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	345	442	314	1855	2302	0	0	0	-1
normalized size	1	1.28	0.91	5.38	6.67	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.718	0.406	0.136	2.509	0.773	0.000	0.000	0.000

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	310	424	308	1929	0	0	0	0	-1
normalized size	1	1.37	0.99	6.22	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.782	0.455	0.066	0.000	0.676	0.000	0.000	0.000

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	373	427	406	3107	355	0	117	780
normalized size	1	4.19	4.80	4.56	34.91	3.99	0.00	1.31	8.76
time (sec)	N/A	0.722	0.493	0.051	2.709	0.862	0.000	3.275	7.156

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	409	608	828	4218	644	0	244	1053
normalized size	1	2.26	3.36	4.57	23.30	3.56	0.00	1.35	5.82
time (sec)	N/A	0.865	0.602	0.051	3.853	0.595	0.000	3.242	8.312

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	445	642	1262	5524	991	0	391	1396
normalized size	1	1.58	2.28	4.49	19.66	3.53	0.00	1.39	4.97
time (sec)	N/A	0.976	1.045	0.049	5.149	0.936	0.000	4.078	9.731

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	408	354	4297	790	0	0	0	-1
normalized size	1	1.62	1.40	17.05	3.13	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.626	0.293	0.163	1.789	0.811	0.000	0.000	0.000

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	329	254	2309	477	0	0	0	-1
normalized size	1	1.66	1.28	11.66	2.41	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.487	0.177	0.145	1.737	0.519	0.000	0.000	0.000

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	213	162	895	221	0	0	0	-1
normalized size	1	1.70	1.30	7.16	1.77	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.355	0.111	0.133	1.682	0.729	0.000	0.000	0.000

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	122	95	411	0	0	0	0	-1
normalized size	1	1.61	1.25	5.41	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.215	0.032	0.053	0.000	0.849	0.000	0.000	0.000

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	304	207	201	172	60	170	113	69
normalized size	1	6.91	4.70	4.57	3.91	1.36	3.86	2.57	1.57
time (sec)	N/A	0.584	0.120	0.049	1.136	0.738	1.129	0.349	5.745

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	437	292	605	424	144	386	0	241
normalized size	1	2.53	1.69	3.50	2.45	0.83	2.23	0.00	1.39
time (sec)	N/A	0.703	0.317	0.048	1.320	1.187	2.512	0.000	5.844

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	535	418	1040	885	349	889	0	545
normalized size	1	2.10	1.64	4.08	3.47	1.37	3.49	0.00	2.14
time (sec)	N/A	0.877	0.430	0.048	1.715	0.652	6.980	0.000	6.930

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	373	620	492	1474	1469	611	1392	0	970
normalized size	1	1.66	1.32	3.95	3.94	1.64	3.73	0.00	2.60
time (sec)	N/A	1.078	0.707	0.052	2.414	0.645	20.689	0.000	9.510

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	341	519	359	2973	1341	0	0	0	-1
normalized size	1	1.52	1.05	8.72	3.93	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.727	0.416	0.156	1.892	0.934	0.000	0.000	0.000

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	260	336	239	1382	886	0	0	0	-1
normalized size	1	1.29	0.92	5.32	3.41	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.532	0.237	0.137	1.900	1.070	0.000	0.000	0.000

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	222	175	978	0	0	0	0	-1
normalized size	1	1.39	1.09	6.11	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.403	0.161	0.056	0.000	0.861	0.000	0.000	0.000

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	101	104	515	134	88	231	120	106
normalized size	1	1.03	1.06	5.26	1.37	0.90	2.36	1.22	1.08
time (sec)	N/A	0.073	0.045	0.049	1.095	0.913	1.519	0.744	4.885

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	432	292	759	421	151	386	204	247
normalized size	1	2.77	1.87	4.87	2.70	0.97	2.47	1.31	1.58
time (sec)	N/A	0.714	0.284	0.050	1.325	0.886	2.497	1.002	5.813

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	462	324	1187	859	334	828	0	415
normalized size	1	1.77	1.24	4.55	3.29	1.28	3.17	0.00	1.59
time (sec)	N/A	0.868	0.428	0.053	1.406	0.906	5.837	0.000	6.175

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	364	630	453	1635	1721	664	1562	0	984
normalized size	1	1.73	1.24	4.49	4.73	1.82	4.29	0.00	2.70
time (sec)	N/A	1.117	0.731	0.051	2.370	0.878	52.282	0.000	9.113

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	457	705	520	2068	2560	1019	0	0	1679
normalized size	1	1.54	1.14	4.53	5.60	2.23	0.00	0.00	3.67
time (sec)	N/A	1.363	1.340	0.050	3.449	0.770	0.000	0.000	12.438

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	361	442	317	1815	2037	0	0	0	-1
normalized size	1	1.22	0.88	5.03	5.64	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.734	0.443	0.141	2.306	0.991	0.000	0.000	0.000

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	251	340	245	1569	0	0	0	0	-1
normalized size	1	1.35	0.98	6.25	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.607	0.336	0.055	0.000	0.874	0.000	0.000	0.000

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	191	207	1049	567	185	382	152	198
normalized size	1	2.25	2.44	12.34	6.67	2.18	4.49	1.79	2.33
time (sec)	N/A	0.292	0.152	0.051	1.201	0.712	5.765	1.066	5.626

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	111	746	255	221	422	254	208
normalized size	1	1.00	0.77	5.18	1.77	1.53	2.93	1.76	1.44
time (sec)	N/A	0.099	0.118	0.049	1.134	0.915	2.582	0.942	5.433

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	535	418	1287	885	355	889	340	545
normalized size	1	2.20	1.72	5.30	3.64	1.46	3.66	1.40	2.24
time (sec)	N/A	0.898	0.470	0.052	1.690	0.786	6.988	0.742	7.084

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	631	452	1729	1721	672	1562	0	983
normalized size	1	1.73	1.24	4.74	4.72	1.84	4.28	0.00	2.69
time (sec)	N/A	1.111	0.747	0.055	2.595	0.835	50.558	0.000	9.293

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	463	673	533	2182	2380	1011	2106	0	1443
normalized size	1	1.45	1.15	4.71	5.14	2.18	4.55	0.00	3.12
time (sec)	N/A	1.406	1.176	0.051	2.789	1.062	51.406	0.000	12.777

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	563	825	637	2616	3816	1509	0	0	2291
normalized size	1	1.47	1.13	4.65	6.78	2.68	0.00	0.00	4.07
time (sec)	N/A	1.695	1.893	0.053	5.652	1.077	0.000	0.000	16.594

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	539	622	905	0	3186	0	0	0	-1
normalized size	1	1.15	1.68	0.00	5.91	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.780	0.764	2.588	2.598	0.842	0.000	0.000	0.000

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	450	537	680	0	2243	0	0	0	-1
normalized size	1	1.19	1.51	0.00	4.98	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.490	0.541	2.091	2.245	0.942	0.000	0.000	0.000

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	343	1214	869	0	1252	0	0	0	-1
normalized size	1	3.54	2.53	0.00	3.65	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.817	0.732	1.821	2.172	0.929	0.000	0.000	0.000

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	283	205	0	633	0	0	0	-1
normalized size	1	1.39	1.01	0.00	3.12	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.433	0.197	1.579	1.965	0.715	0.000	0.000	0.000

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	286	644	987	0	0	0	0	0	-1
normalized size	1	2.25	3.45	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.939	1.301	1.869	0.000	0.605	0.000	0.000	0.000

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	705	1407	0	0	0	0	0	-1
normalized size	1	2.93	5.84	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.028	2.052	1.695	0.000	0.910	0.000	0.000	0.000

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	639	765	865	1987	289	714	185	469
normalized size	1	4.53	5.43	6.13	14.09	2.05	5.06	1.31	3.33
time (sec)	N/A	1.940	0.911	0.048	2.388	0.850	14.310	1.295	6.183

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	741	1035	1765	3282	601	1387	437	955
normalized size	1	2.58	3.61	6.15	11.44	2.09	4.83	1.52	3.33
time (sec)	N/A	2.291	1.041	0.048	3.462	0.843	29.462	1.321	7.701

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	445	826	1340	2689	4808	985	0	727	1870
normalized size	1	1.86	3.01	6.04	10.80	2.21	0.00	1.63	4.20
time (sec)	N/A	2.611	1.628	0.051	5.054	1.003	0.000	1.672	10.820

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	711	790	1559	0	5178	0	0	0	-1
normalized size	1	1.11	2.19	0.00	7.28	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.006	1.375	2.857	2.990	0.967	0.000	0.000	0.000

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	761	666	1194	0	3656	0	0	0	-1
normalized size	1	0.88	1.57	0.00	4.80	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.396	0.950	2.559	2.625	0.773	0.000	0.000	0.000

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	589	570	677	0	2259	0	0	0	-1
normalized size	1	0.97	1.15	0.00	3.84	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.587	0.595	2.177	2.340	0.921	0.000	0.000	0.000

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	334	420	287	0	1202	0	0	0	-1
normalized size	1	1.26	0.86	0.00	3.60	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.532	0.220	1.829	2.031	1.087	0.000	0.000	0.000

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	535	1676	1987	0	0	0	0	0	-1
normalized size	1	3.13	3.71	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.123	3.674	2.113	0.000	0.795	0.000	0.000	0.000

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	442	1219	2652	0	0	0	0	0	-1
normalized size	1	2.76	6.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.887	6.915	2.138	0.000	0.584	0.000	0.000	0.000

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	387	932	3582	0	0	0	0	0	-1
normalized size	1	2.41	9.26	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.061	7.129	2.046	0.000	0.968	0.000	0.000	0.000

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	827	1355	890	5532	444	1182	180	1153
normalized size	1	5.63	9.22	6.05	37.63	3.02	8.04	1.22	7.84
time (sec)	N/A	3.132	2.255	0.050	5.280	0.852	69.830	2.204	7.413

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	920	1788	1814	8031	837	2055	425	1940
normalized size	1	3.08	5.98	6.07	26.86	2.80	6.87	1.42	6.49
time (sec)	N/A	3.691	3.104	0.048	8.094	0.886	134.614	2.825	11.199

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	463	1009	2220	2761	10880	1323	0	709	3434
normalized size	1	2.18	4.79	5.96	23.50	2.86	0.00	1.53	7.42
time (sec)	N/A	4.219	4.697	0.052	12.026	0.684	0.000	3.090	12.769

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1089	896	2330	0	6921	0	0	0	-1
normalized size	1	0.82	2.14	0.00	6.36	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.270	3.599	2.031	3.442	0.909	0.000	0.000	0.000

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	908	825	1555	0	5196	0	0	0	-1
normalized size	1	0.91	1.71	0.00	5.72	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.022	1.381	2.812	2.862	1.378	0.000	0.000	0.000

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	730	655	901	0	3218	0	0	0	-1
normalized size	1	0.90	1.23	0.00	4.41	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.781	0.739	2.359	2.412	0.852	0.000	0.000	0.000

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	420	503	389	0	1789	0	0	0	-1
normalized size	1	1.20	0.93	0.00	4.26	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.617	0.309	1.974	2.186	0.640	0.000	0.000	0.000

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	712	1868	3984	0	0	0	0	0	-1
normalized size	1	2.62	5.60	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.687	4.139	2.321	0.000	0.661	0.000	0.000	0.000

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	692	1751	5108	0	0	0	0	0	-1
normalized size	1	2.53	7.38	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.816	17.471	2.254	0.000	0.865	0.000	0.000	0.000

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	604	1412	6284	0	0	0	0	0	-1
normalized size	1	2.34	10.40	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.926	14.249	2.288	0.000	0.630	0.000	0.000	0.000

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	970	2470	890	11688	559	0	185	1565
normalized size	1	6.60	16.80	6.05	79.51	3.80	0.00	1.26	10.65
time (sec)	N/A	4.541	1.435	0.049	11.336	0.889	0.000	3.222	10.429

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	1061	2289	1814	15765	1045	0	437	3720
normalized size	1	3.55	7.66	6.07	52.73	3.49	0.00	1.46	12.44
time (sec)	N/A	5.195	4.204	0.049	16.438	0.955	0.000	4.341	12.639

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	F(-1)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	463	1152	2583	2762	0	1610	0	727	6275
normalized size	1	2.49	5.58	5.97	0.00	3.48	0.00	1.57	13.55
time (sec)	N/A	6.077	6.255	0.055	0.000	0.877	0.000	3.692	14.174

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	718	1828	4802	0	0	0	0	0	-1
normalized size	1	2.55	6.69	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.616	1.901	2.284	0.000	0.722	0.000	0.000	0.000

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	536	1666	1514	0	0	0	0	0	-1
normalized size	1	3.11	2.82	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.825	1.735	1.955	0.000	0.704	0.000	0.000	0.000

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	283	1072	646	0	0	0	0	0	-1
normalized size	1	3.79	2.28	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.132	0.721	1.741	0.000	0.990	0.000	0.000	0.000

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	721	251	888	0	0	0	0	-1
normalized size	1	5.68	1.98	6.99	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	3.268	0.257	0.056	0.000	1.030	0.000	0.000	0.000

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	1163	79	312	397	87	206	145	96
normalized size	1	26.43	1.80	7.09	9.02	1.98	4.68	3.30	2.18
time (sec)	N/A	5.531	0.370	0.052	1.353	0.875	1.626	0.681	5.760

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	1684	186	1201	1008	231	541	0	419
normalized size	1	9.20	1.02	6.56	5.51	1.26	2.96	0.00	2.29
time (sec)	N/A	6.331	0.671	0.050	1.987	0.947	5.144	0.000	6.371

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	343	1899	318	2144	2115	540	1488	0	981
normalized size	1	5.54	0.93	6.25	6.17	1.57	4.34	0.00	2.86
time (sec)	N/A	7.366	1.111	0.055	3.114	0.659	14.175	0.000	8.300

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	507	2044	442	3093	3434	940	2388	0	1882
normalized size	1	4.03	0.87	6.10	6.77	1.85	4.71	0.00	3.71
time (sec)	N/A	8.431	1.458	0.053	4.371	0.861	55.104	0.000	11.446

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	722	2224	5193	0	0	0	0	0	-1
normalized size	1	3.08	7.19	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	6.150	7.415	2.181	0.000	0.908	0.000	0.000	0.000

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	469	1681	1969	0	0	0	0	0	-1
normalized size	1	3.58	4.20	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.093	4.208	1.969	0.000	0.586	0.000	0.000	0.000

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	1060	1107	0	0	0	0	0	-1
normalized size	1	4.06	4.24	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.242	1.708	1.609	0.000	1.178	0.000	0.000	0.000

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	472	315	1236	416	155	432	179	222
normalized size	1	3.11	2.07	8.13	2.74	1.02	2.84	1.18	1.46
time (sec)	N/A	0.782	0.488	0.051	1.304	0.869	3.465	1.271	5.618

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	1687	187	1633	1004	236	539	349	423
normalized size	1	7.88	0.87	7.63	4.69	1.10	2.52	1.63	1.98
time (sec)	N/A	6.471	0.742	0.053	1.922	0.897	6.195	1.441	6.275

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	1521	307	2572	1995	515	1404	0	731
normalized size	1	4.17	0.84	7.05	5.47	1.41	3.85	0.00	2.00
time (sec)	N/A	7.176	1.102	0.055	2.615	0.921	9.761	0.000	7.202

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	523	2071	466	3538	4187	1005	0	0	1497
normalized size	1	3.96	0.89	6.76	8.01	1.92	0.00	0.00	2.86
time (sec)	N/A	8.459	1.525	0.053	4.888	1.318	0.000	0.000	11.471

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	682	2222	613	4487	6160	1534	0	0	2701
normalized size	1	3.26	0.90	6.58	9.03	2.25	0.00	0.00	3.96
time (sec)	N/A	9.479	2.245	0.055	7.923	1.002	0.000	0.000	13.572

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	635	1890	6052	0	0	0	0	0	-1
normalized size	1	2.98	9.53	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	6.241	7.861	2.153	0.000	0.875	0.000	0.000	0.000

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	410	1328	2950	0	0	0	0	0	-1
normalized size	1	3.24	7.20	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.266	5.113	1.878	0.000	1.262	0.000	0.000	0.000

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	634	767	2449	1966	295	712	273	474
normalized size	1	4.50	5.44	17.37	13.94	2.09	5.05	1.94	3.36
time (sec)	N/A	1.961	0.910	0.051	2.520	0.892	13.796	1.503	6.404

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	296	577	444	1917	848	373	892	499	507
normalized size	1	1.95	1.50	6.48	2.86	1.26	3.01	1.69	1.71
time (sec)	N/A	0.914	0.433	0.052	1.457	0.672	6.178	1.428	6.478

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	375	1899	290	2842	2116	545	1488	628	984
normalized size	1	5.06	0.77	7.58	5.64	1.45	3.97	1.67	2.62
time (sec)	N/A	7.365	1.261	0.054	3.063	1.056	14.452	1.559	8.104

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	525	2071	453	3802	4188	1008	0	0	1505
normalized size	1	3.94	0.86	7.24	7.98	1.92	0.00	0.00	2.87
time (sec)	N/A	8.417	1.551	0.055	4.820	0.931	0.000	0.000	11.558

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	B	B	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	685	1921	611	4782	5583	1517	3720	0	2155
normalized size	1	2.80	0.89	6.98	8.15	2.21	5.43	0.00	3.15
time (sec)	N/A	9.579	2.196	0.055	5.717	0.962	127.920	0.000	14.311

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	B	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	851	2454	793	5731	9282	2257	0	0	3550
normalized size	1	2.88	0.93	6.73	10.91	2.65	0.00	0.00	4.17
time (sec)	N/A	10.921	3.054	0.056	12.472	1.068	0.000	0.000	18.950

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	243	269	0	1118	720	0	3889	1237
normalized size	1	1.09	1.21	0.00	5.01	3.23	0.00	17.44	5.55
time (sec)	N/A	0.386	0.260	0.347	1.509	1.069	0.000	6.401	5.620

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	210	225	0	740	529	0	2535	663
normalized size	1	1.11	1.18	0.00	3.89	2.78	0.00	13.34	3.49
time (sec)	N/A	0.316	0.183	0.296	1.377	1.096	0.000	3.601	5.024

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	311	189	0	393	309	756	1256	295
normalized size	1	2.09	1.27	0.00	2.64	2.07	5.07	8.43	1.98
time (sec)	N/A	0.370	0.280	0.128	1.205	0.971	60.838	1.953	4.839

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	74	0	156	162	444	572	134
normalized size	1	1.00	0.86	0.00	1.81	1.88	5.16	6.65	1.56
time (sec)	N/A	0.061	0.040	0.181	1.201	0.823	39.913	0.779	4.339

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	223	172	0	276	0	0	0	-1
normalized size	1	1.58	1.22	0.00	1.96	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.345	0.133	0.411	4.575	0.808	0.000	0.000	0.000

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	233	189	0	0	0	0	0	-1
normalized size	1	1.55	1.26	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.376	0.188	0.311	0.000	0.982	0.000	0.000	0.000

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	B	B	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	201	216	0	582	250	0	98	204
normalized size	1	2.26	2.43	0.00	6.54	2.81	0.00	1.10	2.29
time (sec)	N/A	0.286	0.171	0.313	1.255	0.862	0.000	7.179	5.253

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	236	196	0	945	478	0	230	374
normalized size	1	1.30	1.08	0.00	5.22	2.64	0.00	1.27	2.07
time (sec)	N/A	0.341	0.452	0.310	2.116	0.628	0.000	11.765	5.276

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	269	220	0	1398	773	0	388	610
normalized size	1	0.96	0.78	0.00	4.98	2.75	0.00	1.38	2.17
time (sec)	N/A	0.409	0.500	0.308	1.888	0.653	0.000	17.566	5.869

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	442	345	441	0	1978	1074	0	4589	2555
normalized size	1	0.78	1.00	0.00	4.48	2.43	0.00	10.38	5.78
time (sec)	N/A	0.685	0.404	0.433	1.655	1.663	0.000	11.649	5.915

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	352	310	374	0	1336	774	0	2995	1328
normalized size	1	0.88	1.06	0.00	3.80	2.20	0.00	8.51	3.77
time (sec)	N/A	0.543	0.282	0.435	1.426	1.164	0.000	7.343	5.138

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	210	224	0	740	530	0	1757	661
normalized size	1	0.84	0.90	0.00	2.96	2.12	0.00	7.03	2.64
time (sec)	N/A	0.355	0.204	0.301	1.368	0.829	0.000	3.885	5.149

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	101	0	309	297	779	860	303
normalized size	1	1.00	0.81	0.00	2.49	2.40	6.28	6.94	2.44
time (sec)	N/A	0.074	0.046	0.289	1.183	0.894	58.606	1.599	4.625

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	289	369	264	0	580	0	0	0	-1
normalized size	1	1.28	0.91	0.00	2.01	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.489	0.197	0.467	5.313	0.933	0.000	0.000	0.000

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	259	327	233	0	1190	0	0	0	-1
normalized size	1	1.26	0.90	0.00	4.59	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.523	0.254	0.455	4.349	0.731	0.000	0.000	0.000

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	242	354	258	0	0	0	0	0	-1
normalized size	1	1.46	1.07	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.560	0.347	0.452	0.000	0.911	0.000	0.000	0.000

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	301	329	0	1544	409	0	94	421
normalized size	1	3.24	3.54	0.00	16.60	4.40	0.00	1.01	4.53
time (sec)	N/A	0.516	0.323	0.449	1.937	1.006	0.000	53.750	5.622

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	340	474	0	2247	710	0	222	652
normalized size	1	1.80	2.51	0.00	11.89	3.76	0.00	1.17	3.45
time (sec)	N/A	0.600	0.423	0.461	2.862	0.868	0.000	78.923	6.075

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	293	375	357	0	3058	1087	0	376	954
normalized size	1	1.28	1.22	0.00	10.44	3.71	0.00	1.28	3.26
time (sec)	N/A	0.721	1.052	0.450	3.176	1.000	0.000	110.702	6.708

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	477	435	631	0	2901	1336	0	5502	4476
normalized size	1	0.91	1.32	0.00	6.08	2.80	0.00	11.53	9.38
time (sec)	N/A	0.992	0.672	0.436	1.889	2.590	0.000	15.017	6.558

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	387	345	441	0	1978	1075	0	3980	2547
normalized size	1	0.89	1.14	0.00	5.11	2.78	0.00	10.28	6.58
time (sec)	N/A	0.700	0.343	0.448	1.684	1.496	0.000	10.147	6.256

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	283	243	269	0	1118	721	0	2374	1234
normalized size	1	0.86	0.95	0.00	3.95	2.55	0.00	8.39	4.36
time (sec)	N/A	0.382	0.228	0.319	1.402	1.158	0.000	5.671	5.401

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	124	0	479	429	0	1282	588
normalized size	1	1.00	0.79	0.00	3.07	2.75	0.00	8.22	3.77
time (sec)	N/A	0.086	0.075	0.291	1.185	0.646	0.000	2.455	4.976

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	373	455	368	0	935	0	0	0	-1
normalized size	1	1.22	0.99	0.00	2.51	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.600	0.285	0.450	4.613	0.915	0.000	0.000	0.000

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	390	543	394	0	1785	0	0	0	-1
normalized size	1	1.39	1.01	0.00	4.58	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.691	0.404	0.453	4.412	0.704	0.000	0.000	0.000

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	361	461	331	0	2746	0	0	0	-1
normalized size	1	1.28	0.92	0.00	7.61	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.709	0.487	0.455	5.097	0.700	0.000	0.000	0.000

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	326	444	326	0	0	0	0	0	-1
normalized size	1	1.36	1.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.794	0.465	0.453	0.000	0.818	0.000	0.000	0.000

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	269	426	370	0	1003	0	0	0	-1
normalized size	1	1.58	1.38	0.00	3.73	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.646	0.299	0.471	4.290	0.862	0.000	0.000	0.000

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	343	266	0	627	0	0	0	-1
normalized size	1	1.63	1.26	0.00	2.97	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.488	0.188	0.459	4.694	1.026	0.000	0.000	0.000

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	223	170	0	306	0	0	0	-1
normalized size	1	1.66	1.27	0.00	2.28	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.389	0.119	0.392	4.051	0.585	0.000	0.000	0.000

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	128	101	0	0	0	0	0	-1
normalized size	1	1.60	1.26	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.202	0.032	0.372	0.000	0.731	0.000	0.000	0.000

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	316	219	0	175	74	0	90	76
normalized size	1	6.32	4.38	0.00	3.50	1.48	0.00	1.80	1.52
time (sec)	N/A	0.557	0.111	0.476	1.218	0.926	0.000	1.216	5.720

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	455	304	0	427	194	0	0	239
normalized size	1	2.51	1.68	0.00	2.36	1.07	0.00	0.00	1.32
time (sec)	N/A	0.689	0.289	0.478	1.293	0.772	0.000	0.000	6.080

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	266	557	434	0	888	483	0	0	573
normalized size	1	2.09	1.63	0.00	3.34	1.82	0.00	0.00	2.15
time (sec)	N/A	0.834	0.413	0.469	1.727	0.927	0.000	0.000	6.337

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	389	646	518	0	1472	859	0	0	986
normalized size	1	1.66	1.33	0.00	3.78	2.21	0.00	0.00	2.53
time (sec)	N/A	1.077	0.717	0.474	2.357	0.990	0.000	0.000	7.235

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	541	375	0	1892	0	0	0	-1
normalized size	1	1.51	1.04	0.00	5.27	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.727	0.451	0.454	4.404	0.930	0.000	0.000	0.000

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	275	351	252	0	1273	0	0	0	-1
normalized size	1	1.28	0.92	0.00	4.63	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.532	0.254	0.451	4.920	0.854	0.000	0.000	0.000

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	234	183	0	0	0	0	0	-1
normalized size	1	1.39	1.09	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.387	0.183	0.314	0.000	0.883	0.000	0.000	0.000

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	107	114	0	136	105	0	84	113
normalized size	1	1.05	1.12	0.00	1.33	1.03	0.00	0.82	1.11
time (sec)	N/A	0.079	0.059	0.314	1.303	0.614	0.000	1.712	4.836

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	450	304	0	424	196	0	180	241
normalized size	1	2.71	1.83	0.00	2.55	1.18	0.00	1.08	1.45
time (sec)	N/A	0.679	0.354	0.474	1.426	0.926	0.000	4.499	4.816

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	273	482	342	0	862	450	0	0	432
normalized size	1	1.77	1.25	0.00	3.16	1.65	0.00	0.00	1.58
time (sec)	N/A	0.830	0.453	0.470	1.475	0.658	0.000	0.000	5.461

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	380	656	478	0	1724	946	0	0	1016
normalized size	1	1.73	1.26	0.00	4.54	2.49	0.00	0.00	2.67
time (sec)	N/A	1.087	0.762	0.472	2.403	0.662	0.000	0.000	7.381

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	477	735	549	0	2563	1458	0	0	1665
normalized size	1	1.54	1.15	0.00	5.37	3.06	0.00	0.00	3.49
time (sec)	N/A	1.357	1.538	0.471	3.461	1.012	0.000	0.000	9.933

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	382	461	334	0	2894	0	0	0	-1
normalized size	1	1.21	0.87	0.00	7.58	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.745	0.448	0.459	5.518	0.692	0.000	0.000	0.000

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	263	356	259	0	0	0	0	0	-1
normalized size	1	1.35	0.98	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.597	0.344	0.436	0.000	0.752	0.000	0.000	0.000

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	B	B	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	201	215	0	578	250	0	97	205
normalized size	1	2.26	2.42	0.00	6.49	2.81	0.00	1.09	2.30
time (sec)	N/A	0.317	0.163	0.312	1.530	0.938	0.000	9.470	5.493

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	115	0	259	266	0	187	221
normalized size	1	1.00	0.76	0.00	1.72	1.76	0.00	1.24	1.46
time (sec)	N/A	0.104	0.140	0.311	1.457	0.906	0.000	1.645	4.965

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	557	434	0	888	487	0	370	573
normalized size	1	2.19	1.71	0.00	3.50	1.92	0.00	1.46	2.26
time (sec)	N/A	0.869	0.422	0.473	1.981	0.919	0.000	4.008	6.652

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	381	657	477	0	1724	949	0	0	1018
normalized size	1	1.72	1.25	0.00	4.52	2.49	0.00	0.00	2.67
time (sec)	N/A	1.083	0.787	0.471	2.764	0.981	0.000	0.000	7.534

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	483	701	561	0	2383	1416	0	0	1341
normalized size	1	1.45	1.16	0.00	4.93	2.93	0.00	0.00	2.78
time (sec)	N/A	1.389	1.280	0.471	2.516	1.053	0.000	0.000	7.930

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	587	859	671	0	3819	2181	0	0	2400
normalized size	1	1.46	1.14	0.00	6.51	3.72	0.00	0.00	4.09
time (sec)	N/A	1.691	2.033	0.470	4.954	1.006	0.000	0.000	10.216

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	584	670	949	0	3764	0	0	0	-1
normalized size	1	1.15	1.62	0.00	6.45	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.901	0.908	0.308	7.667	0.908	0.000	0.000	0.000

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	487	578	716	0	2691	0	0	0	-1
normalized size	1	1.19	1.47	0.00	5.53	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.586	0.573	0.304	6.916	0.818	0.000	0.000	0.000

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	1323	937	0	1542	0	0	0	-1
normalized size	1	3.56	2.52	0.00	4.15	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.878	0.744	0.124	6.924	0.902	0.000	0.000	0.000

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	307	216	0	825	0	0	0	-1
normalized size	1	1.40	0.98	0.00	3.75	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.481	0.187	0.113	6.645	0.740	0.000	0.000	0.000

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	692	742	0	0	0	0	0	-1
normalized size	1	2.26	2.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.874	1.960	0.312	0.000	0.924	0.000	0.000	0.000

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	766	1556	0	0	0	0	0	-1
normalized size	1	2.93	5.96	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.945	3.207	0.314	0.000	0.989	0.000	0.000	0.000

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	691	801	0	2017	600	0	185	561
normalized size	1	4.58	5.30	0.00	13.36	3.97	0.00	1.23	3.72
time (sec)	N/A	2.055	0.909	0.321	2.244	0.981	0.000	18.434	6.821

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	307	800	1079	0	3312	1167	0	481	993
normalized size	1	2.61	3.51	0.00	10.79	3.80	0.00	1.57	3.23
time (sec)	N/A	2.432	1.217	0.314	3.500	0.744	0.000	25.968	7.857

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	475	892	1392	0	4838	1868	0	841	1794
normalized size	1	1.88	2.93	0.00	10.19	3.93	0.00	1.77	3.78
time (sec)	N/A	2.875	1.359	0.313	4.867	1.143	0.000	38.004	9.741

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	766	848	1634	0	5952	0	0	0	-1
normalized size	1	1.11	2.13	0.00	7.77	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.348	1.542	0.465	8.098	1.000	0.000	0.000	0.000

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	819	714	1254	0	4247	0	0	0	-1
normalized size	1	0.87	1.53	0.00	5.19	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.609	1.019	0.473	7.580	1.063	0.000	0.000	0.000

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	635	614	713	0	2662	0	0	0	-1
normalized size	1	0.97	1.12	0.00	4.19	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.657	0.642	0.311	7.607	0.950	0.000	0.000	0.000

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	361	454	303	0	1473	0	0	0	-1
normalized size	1	1.26	0.84	0.00	4.08	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.543	0.268	0.299	6.457	1.025	0.000	0.000	0.000

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	572	1790	1654	0	0	0	0	0	-1
normalized size	1	3.13	2.89	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.081	3.252	0.455	0.000	1.072	0.000	0.000	0.000

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	472	1309	2834	0	0	0	0	0	-1
normalized size	1	2.77	6.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.765	12.396	0.452	0.000	1.121	0.000	0.000	0.000

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	417	1003	4761	0	0	0	0	0	-1
normalized size	1	2.41	11.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.841	13.701	0.451	0.000	1.152	0.000	0.000	0.000

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	889	1415	0	5588	975	0	176	1195
normalized size	1	5.66	9.01	0.00	35.59	6.21	0.00	1.12	7.61
time (sec)	N/A	3.170	2.241	0.456	4.967	1.002	0.000	110.181	7.477

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	319	989	1860	0	8087	1729	0	461	1934
normalized size	1	3.10	5.83	0.00	25.35	5.42	0.00	1.45	6.06
time (sec)	N/A	3.789	3.280	0.458	7.605	0.942	0.000	163.533	9.424

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	493	1085	2320	0	10936	2633	0	0	3296
normalized size	1	2.20	4.71	0.00	22.18	5.34	0.00	0.00	6.69
time (sec)	N/A	4.316	3.924	0.454	11.751	1.187	0.000	0.000	11.154

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1172	961	2448	0	7845	0	0	0	-1
normalized size	1	0.82	2.09	0.00	6.69	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.479	3.572	0.480	6.360	1.026	0.000	0.000	0.000

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	976	886	1627	0	5931	0	0	0	-1
normalized size	1	0.91	1.67	0.00	6.08	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.198	1.562	0.464	5.593	1.054	0.000	0.000	0.000

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	786	706	945	0	3724	0	0	0	-1
normalized size	1	0.90	1.20	0.00	4.74	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.930	0.764	0.320	5.490	0.949	0.000	0.000	0.000

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	454	544	409	0	2129	0	0	0	-1
normalized size	1	1.20	0.90	0.00	4.69	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.664	0.321	0.302	4.976	0.689	0.000	0.000	0.000

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	762	1995	2941	0	0	0	0	0	-1
normalized size	1	2.62	3.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.624	5.203	0.452	0.000	0.736	0.000	0.000	0.000

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	739	1875	4942	0	0	0	0	0	-1
normalized size	1	2.54	6.69	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.738	14.828	0.452	0.000	0.834	0.000	0.000	0.000

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	644	1512	6221	0	0	0	0	0	-1
normalized size	1	2.35	9.66	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.811	25.237	0.454	0.000	0.750	0.000	0.000	0.000

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	561	1170	8775	0	0	0	0	0	-1
normalized size	1	2.09	15.64	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.093	8.166	0.454	0.000	0.918	0.000	0.000	0.000

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	768	1952	3265	0	0	0	0	0	-1
normalized size	1	2.54	4.25	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.585	4.335	0.471	0.000	0.929	0.000	0.000	0.000

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	573	1780	1741	0	0	0	0	0	-1
normalized size	1	3.11	3.04	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.746	1.653	0.456	0.000	0.883	0.000	0.000	0.000

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	303	1156	802	0	0	0	0	0	-1
normalized size	1	3.82	2.65	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.032	0.698	0.312	0.000	0.657	0.000	0.000	0.000

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	782	306	0	0	0	0	0	-1
normalized size	1	5.71	2.23	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	3.172	0.279	0.316	0.000	0.884	0.000	0.000	0.000

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	A	F	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	1237	90	0	407	149	0	162	122
normalized size	1	24.74	1.80	0.00	8.14	2.98	0.00	3.24	2.44
time (sec)	N/A	5.322	0.391	0.470	1.192	0.916	0.000	1.659	5.680

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	199	1800	793	0	1018	428	0	0	361
normalized size	1	9.05	3.98	0.00	5.12	2.15	0.00	0.00	1.81
time (sec)	N/A	6.088	0.829	0.472	1.222	0.961	0.000	0.000	5.852

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	2025	975	0	2126	1068	0	0	1011
normalized size	1	5.49	2.64	0.00	5.76	2.89	0.00	0.00	2.74
time (sec)	N/A	7.197	1.399	0.479	2.116	1.000	0.000	0.000	8.489

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	543	2180	1295	0	3445	1910	0	0	1921
normalized size	1	4.01	2.38	0.00	6.34	3.52	0.00	0.00	3.54
time (sec)	N/A	8.354	1.918	0.471	2.978	0.884	0.000	0.000	10.342

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	770	2384	4312	0	0	0	0	0	-1
normalized size	1	3.10	5.60	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	6.015	8.913	0.442	0.000	0.940	0.000	0.000	0.000

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	500	1807	2196	0	0	0	0	0	-1
normalized size	1	3.61	4.39	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.981	5.026	0.467	0.000	0.546	0.000	0.000	0.000

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	282	1157	1261	0	0	0	0	0	-1
normalized size	1	4.10	4.47	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	4.172	1.985	0.319	0.000	0.871	0.000	0.000	0.000

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	514	331	0	428	263	0	156	237
normalized size	1	3.15	2.03	0.00	2.63	1.61	0.00	0.96	1.45
time (sec)	N/A	0.756	0.448	0.319	0.922	0.746	0.000	4.781	6.268

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	1803	789	0	1014	432	0	314	365
normalized size	1	7.81	3.42	0.00	4.39	1.87	0.00	1.36	1.58
time (sec)	N/A	6.112	0.996	0.478	1.289	0.824	0.000	8.062	5.798

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	392	1621	870	0	2006	983	0	0	-1
normalized size	1	4.14	2.22	0.00	5.12	2.51	0.00	0.00	-0.00
time (sec)	N/A	6.812	1.390	0.477	1.803	1.012	0.000	0.000	0.000

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	560	2207	1340	0	4198	2052	0	0	1784
normalized size	1	3.94	2.39	0.00	7.50	3.66	0.00	0.00	3.19
time (sec)	N/A	8.150	1.987	0.474	4.814	1.071	0.000	0.000	10.278

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	729	2368	1695	0	6171	3183	0	0	3157
normalized size	1	3.25	2.33	0.00	8.47	4.37	0.00	0.00	4.33
time (sec)	N/A	9.291	3.039	0.470	7.495	1.281	0.000	0.000	11.670

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	676	2026	5730	0	0	0	0	0	-1
normalized size	1	3.00	8.48	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	6.201	9.800	0.452	0.000	0.886	0.000	0.000	0.000

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	B	F	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	441	1435	3172	0	0	0	0	0	-1
normalized size	1	3.25	7.19	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	5.123	6.592	0.456	0.000	0.905	0.000	0.000	0.000

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	686	803	0	1995	600	0	186	565
normalized size	1	4.54	5.32	0.00	13.21	3.97	0.00	1.23	3.74
time (sec)	N/A	1.996	0.987	0.314	2.350	0.871	0.000	19.661	7.496

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	C	F	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	317	626	464	0	861	654	0	371	505
normalized size	1	1.97	1.46	0.00	2.72	2.06	0.00	1.17	1.59
time (sec)	N/A	0.879	0.436	0.314	1.560	0.991	0.000	4.172	6.670

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	402	2025	971	0	2126	1076	0	664	1007
normalized size	1	5.04	2.42	0.00	5.29	2.68	0.00	1.65	2.50
time (sec)	N/A	7.043	1.374	0.474	2.747	1.086	0.000	8.669	8.731

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	562	2207	1334	0	4199	2057	0	0	1785
normalized size	1	3.93	2.37	0.00	7.47	3.66	0.00	0.00	3.18
time (sec)	N/A	8.134	2.152	0.473	4.833	0.739	0.000	0.000	10.139

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	732	2041	1653	0	5594	3062	0	0	2419
normalized size	1	2.79	2.26	0.00	7.64	4.18	0.00	0.00	3.30
time (sec)	N/A	9.227	2.674	0.474	5.556	1.323	0.000	0.000	11.667

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	C	B	F	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	908	2610	2138	0	9293	4725	0	0	4649
normalized size	1	2.87	2.35	0.00	10.23	5.20	0.00	0.00	5.12
time (sec)	N/A	10.511	4.245	0.476	11.575	1.218	0.000	0.000	13.701

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F(-1)	F	F	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	189	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.975	0.553	180.000	0.000	0.753	0.000	0.000	0.000

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	F	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	190	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.884	0.574	3.526	0.000	0.873	0.000	0.000	0.000

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	B	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	292	0	206	0	0	2680	0	0	-1
normalized size	1	0.00	0.71	0.00	0.00	9.18	0.00	0.00	-0.00
time (sec)	N/A	1.977	6.955	8.687	0.000	1.021	0.000	0.000	0.000

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	B	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	0	134	0	0	991	0	0	-1
normalized size	1	0.00	0.64	0.00	0.00	4.72	0.00	0.00	-0.00
time (sec)	N/A	1.215	2.016	7.855	0.000	1.082	0.000	0.000	0.000

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	168	78	0	0	274	0	0	-1
normalized size	1	1.31	0.61	0.00	0.00	2.14	0.00	0.00	-0.01
time (sec)	N/A	0.616	0.519	8.817	0.000	0.907	0.000	0.000	0.000

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	A	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	125	0	0	0	0	98	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.78	0.00	0.00	-0.01
time (sec)	N/A	0.737	0.247	4.210	0.000	0.832	0.000	0.000	0.000

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F(-1)	F	A	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	206	0	0	0	0	293	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	1.42	0.00	0.00	-0.00
time (sec)	N/A	0.826	0.276	180.000	0.000	1.002	0.000	0.000	0.000

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F(-1)	F	B	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	295	0	0	0	0	818	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	2.77	0.00	0.00	-0.00
time (sec)	N/A	0.815	0.335	180.000	0.000	1.082	0.000	0.000	0.000

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	B	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	0	206	0	0	2669	0	0	-1
normalized size	1	0.00	0.67	0.00	0.00	8.64	0.00	0.00	-0.00
time (sec)	N/A	2.055	7.181	8.714	0.000	0.810	0.000	0.000	0.000

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	A	F	F	B	F(-1)	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	0	134	0	0	983	0	0	-1
normalized size	1	0.00	0.60	0.00	0.00	4.41	0.00	0.00	-0.00
time (sec)	N/A	1.159	2.091	7.781	0.000	1.026	0.000	0.000	0.000

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	170	78	0	0	269	0	0	-1
normalized size	1	1.24	0.57	0.00	0.00	1.96	0.00	0.00	-0.01
time (sec)	N/A	0.616	0.527	8.295	0.000	1.054	0.000	0.000	0.000

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	A	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	128	0	0	0	0	93	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.73	0.00	0.00	-0.01
time (sec)	N/A	0.695	0.249	3.997	0.000	0.823	0.000	0.000	0.000

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F(-1)	F	A	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	214	0	0	0	0	284	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	1.33	0.00	0.00	-0.00
time (sec)	N/A	0.776	0.274	180.000	0.000	0.623	0.000	0.000	0.000

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F(-1)	F	B	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	306	0	0	0	0	815	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	2.66	0.00	0.00	-0.00
time (sec)	N/A	0.757	0.335	180.000	0.000	0.933	0.000	0.000	0.000

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	40	0	0	65	0	0	-1
normalized size	1	1.00	0.98	0.00	0.00	1.59	0.00	0.00	-0.02
time (sec)	N/A	0.108	0.028	0.500	0.000	0.693	0.000	0.000	0.000

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	40	0	0	65	0	0	-1
normalized size	1	1.00	0.98	0.00	0.00	1.59	0.00	0.00	-0.02
time (sec)	N/A	0.041	0.012	0.862	0.000	1.227	0.000	0.000	0.000

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	F	F(-1)	F(-2)	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	193	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.811	0.445	3.346	0.000	0.874	0.000	0.000	0.000

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	F	F(-1)	F(-2)	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	194	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.711	0.406	3.240	0.000	0.820	0.000	0.000	0.000

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	64288	766	375	0	0	141
normalized size	1	1.00	0.96	1428.62	17.02	8.33	0.00	0.00	3.13
time (sec)	N/A	0.118	0.021	35.349	1.778	0.799	0.000	0.000	5.747

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	11062	387	188	0	0	100
normalized size	1	1.00	0.96	245.82	8.60	4.18	0.00	0.00	2.22
time (sec)	N/A	0.112	0.017	3.775	1.465	0.823	0.000	0.000	4.773

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	1152	151	72	0	0	71
normalized size	1	1.00	0.96	25.60	3.36	1.60	0.00	0.00	1.58
time (sec)	N/A	0.082	0.013	0.607	1.203	1.133	0.000	0.000	4.669

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	39	368	49	45	0	38	40
normalized size	1	1.00	0.95	8.98	1.20	1.10	0.00	0.93	0.98
time (sec)	N/A	0.122	0.093	0.191	2.328	0.899	0.000	0.166	4.657

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	41	366	81	86	0	95	42
normalized size	1	1.00	0.95	8.51	1.88	2.00	0.00	2.21	0.98
time (sec)	N/A	0.122	0.022	0.178	2.471	0.612	0.000	0.180	4.492

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	366	220	238	0	301	72
normalized size	1	1.00	0.96	8.13	4.89	5.29	0.00	6.69	1.60
time (sec)	N/A	0.122	0.021	0.175	3.187	0.743	0.000	0.245	4.543

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	47	0	0	81	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	1.65	0.00	0.00	-0.02
time (sec)	N/A	0.149	0.029	12.796	0.000	0.927	0.000	0.000	0.000

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	51	0	0	85	0	0	-1
normalized size	1	1.00	0.93	0.00	0.00	1.55	0.00	0.00	-0.02
time (sec)	N/A	0.216	0.056	12.590	0.000	0.790	0.000	0.000	0.000

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	50	0	0	83	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	1.60	0.00	0.00	-0.02
time (sec)	N/A	0.106	0.013	14.174	0.000	1.034	0.000	0.000	0.000

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	39	368	49	45	0	38	40
normalized size	1	1.00	0.95	8.98	1.20	1.10	0.00	0.93	0.98
time (sec)	N/A	0.123	0.068	0.054	2.293	0.736	0.000	0.177	0.002

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	43	374	53	51	0	42	44
normalized size	1	1.00	0.91	7.96	1.13	1.09	0.00	0.89	0.94
time (sec)	N/A	0.166	0.150	0.198	1.690	0.908	0.000	0.239	4.429

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	42	371	51	48	0	40	42
normalized size	1	1.00	0.95	8.43	1.16	1.09	0.00	0.91	0.95
time (sec)	N/A	0.078	0.069	0.209	1.583	0.978	0.000	0.173	4.514

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	0	0	0	0	0	0	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.110	0.400	0.872	0.000	0.849	0.000	0.000	0.000

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	0	0	110	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	1.47	0.00	0.00	-0.01
time (sec)	N/A	0.075	0.028	0.477	0.000	0.869	0.000	0.000	0.000

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	0	0	88	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	1.17	0.00	0.00	-0.01
time (sec)	N/A	0.073	0.027	0.438	0.000	0.957	0.000	0.000	0.000

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	0	0	66	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.88	0.00	0.00	-0.01
time (sec)	N/A	0.050	0.021	0.302	0.000	0.817	0.000	0.000	0.000

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	72	0	0	40	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.56	0.00	0.00	-0.01
time (sec)	N/A	0.032	0.074	0.306	0.000	0.854	0.000	0.000	0.000

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	34	0	37	34	160	82	33
normalized size	1	1.00	1.03	0.00	1.12	1.03	4.85	2.48	1.00
time (sec)	N/A	0.075	0.075	0.470	1.687	0.931	82.020	0.519	4.477

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	71	0	0	40	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.56	0.00	0.00	-0.01
time (sec)	N/A	0.029	0.072	0.304	0.000	1.074	0.000	0.000	0.000

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	0	0	66	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.88	0.00	0.00	-0.01
time (sec)	N/A	0.047	0.016	0.306	0.000	1.000	0.000	0.000	0.000

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	0	0	88	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	1.17	0.00	0.00	-0.01
time (sec)	N/A	0.070	0.018	0.436	0.000	0.633	0.000	0.000	0.000

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	361	1021	0	0	0	0	0	0	-1
normalized size	1	2.83	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.926	4.406	5.970	0.000	1.088	0.000	0.000	0.000

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	282	656	0	0	0	0	0	0	-1
normalized size	1	2.33	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.211	3.235	3.188	0.000	1.025	0.000	0.000	0.000

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	371	1415	0	0	0	0	0	-1
normalized size	1	1.83	6.97	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.762	1.050	3.174	0.000	1.045	0.000	0.000	0.000

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	163	304	1447	0	0	0	0	-1
normalized size	1	1.33	2.47	11.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.365	0.311	0.359	0.000	0.861	0.000	0.000	0.000

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	82	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.427	0.164	7.587	0.000	0.722	0.000	0.000	0.000

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	82	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.480	0.349	8.959	0.000	0.600	0.000	0.000	0.000

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	298	42	357	32	0	0	-1
normalized size	1	1.00	9.03	1.27	10.82	0.97	0.00	0.00	-0.03
time (sec)	N/A	0.095	0.190	0.047	0.853	0.906	0.000	0.000	0.000

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	320	45	344	38	0	0	-1
normalized size	1	1.00	11.85	1.67	12.74	1.41	0.00	0.00	-0.04
time (sec)	N/A	0.066	0.256	0.047	0.763	1.028	0.000	0.000	0.000

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	320	45	336	38	0	0	-1
normalized size	1	1.00	11.85	1.67	12.44	1.41	0.00	0.00	-0.04
time (sec)	N/A	0.118	0.187	0.046	0.813	0.682	0.000	0.000	0.000

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	320	45	343	38	0	0	-1
normalized size	1	1.00	11.85	1.67	12.70	1.41	0.00	0.00	-0.04
time (sec)	N/A	0.117	0.176	0.048	0.823	0.690	0.000	0.000	0.000

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	B	F	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	282	656	0	0	0	0	0	0	-1
normalized size	1	2.33	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.312	2.864	3.682	0.000	0.760	0.000	0.000	0.000

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	371	1415	0	0	0	0	0	-1
normalized size	1	1.83	6.97	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.819	0.898	4.399	0.000	1.004	0.000	0.000	0.000

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	163	303	1447	0	0	0	0	-1
normalized size	1	1.33	2.46	11.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.394	0.268	0.338	0.000	0.972	0.000	0.000	0.000

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	83	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.431	0.133	12.992	0.000	0.677	0.000	0.000	0.000

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	83	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.460	0.271	5.410	0.000	0.876	0.000	0.000	0.000

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [89] had the largest ratio of [.7381]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	10	4	1.09	38	0.105
2	A	10	4	1.11	38	0.105
3	B	13	6	2.10	36	0.167
4	A	4	3	1.00	28	0.107
5	A	14	11	1.60	38	0.290
6	A	15	11	1.56	38	0.290
7	B	10	4	2.25	38	0.105
8	A	10	4	1.30	38	0.105
9	A	10	4	0.96	38	0.105
10	A	14	4	0.78	40	0.100
11	A	14	4	0.88	40	0.100
12	A	10	4	0.84	38	0.105
13	A	4	3	1.00	30	0.100
14	A	19	13	1.28	40	0.325
15	A	18	13	1.27	40	0.325
16	A	19	11	1.47	40	0.275
17	B	14	4	3.22	40	0.100
18	A	14	4	1.80	40	0.100
19	A	14	4	1.28	40	0.100
20	A	18	4	0.91	40	0.100
21	A	14	4	0.89	40	0.100
22	A	10	4	0.86	38	0.105
23	A	4	3	1.00	30	0.100
24	A	23	13	1.22	40	0.325
25	A	22	14	1.40	40	0.350
26	A	22	13	1.28	40	0.325
27	A	23	11	1.37	40	0.275

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
28	B	18	4	4.19	40	0.100
29	B	18	4	2.26	40	0.100
30	A	18	4	1.58	40	0.100
31	A	23	13	1.62	40	0.325
32	A	19	13	1.66	40	0.325
33	A	14	11	1.70	38	0.290
34	A	10	8	1.61	30	0.267
35	C	20	9	6.91	40	0.225
36	C	24	11	2.53	40	0.275
37	C	28	11	2.10	40	0.275
38	C	32	11	1.66	40	0.275
39	A	22	14	1.52	40	0.350
40	A	18	13	1.29	40	0.325
41	A	15	11	1.39	38	0.290
42	A	4	3	1.03	30	0.100
43	C	24	11	2.77	40	0.275
44	C	28	11	1.77	40	0.275
45	C	32	11	1.73	40	0.275
46	C	36	11	1.54	40	0.275
47	A	22	13	1.22	40	0.325
48	A	19	11	1.35	40	0.275
49	B	10	4	2.25	38	0.105
50	A	4	3	1.00	30	0.100
51	C	28	11	2.20	40	0.275
52	C	32	11	1.73	40	0.275
53	C	36	11	1.45	40	0.275
54	C	40	11	1.47	40	0.275
55	A	54	13	1.15	40	0.325
56	A	46	13	1.19	40	0.325
57	B	78	14	3.54	38	0.368
58	A	16	12	1.39	30	0.400
59	B	39	19	2.25	40	0.475
60	B	43	20	2.93	40	0.500
61	C	58	11	4.53	40	0.275
62	C	66	11	2.58	40	0.275
63	C	74	11	1.86	40	0.275

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
64	A	86	13	1.11	42	0.310
65	A	74	13	0.88	42	0.310
66	A	46	13	0.97	40	0.325
67	A	20	13	1.26	32	0.406
68	B	86	27	3.13	42	0.643
69	B	65	21	2.76	42	0.500
70	B	73	20	2.41	42	0.476
71	C	92	11	5.63	42	0.262
72	C	104	11	3.08	42	0.262
73	C	116	11	2.18	42	0.262
74	A	122	13	0.82	42	0.310
75	A	86	13	0.91	42	0.310
76	A	54	13	0.90	40	0.325
77	A	24	13	1.20	32	0.406
78	B	106	28	2.62	42	0.667
79	B	90	23	2.53	42	0.548
80	B	95	21	2.34	42	0.500
81	C	130	11	6.60	42	0.262
82	C	146	11	3.55	42	0.262
83	C	162	11	2.49	42	0.262
84	B	106	28	2.55	42	0.667
85	B	86	27	3.11	42	0.643
86	B	68	24	3.79	40	0.600
87	B	46	23	5.68	32	0.719
88	C	61	29	26.43	42	0.690
89	C	87	31	9.20	42	0.738
90	C	117	31	5.54	42	0.738
91	C	151	31	4.03	42	0.738
92	B	119	28	3.08	42	0.667
93	B	94	26	3.58	42	0.619
94	B	72	25	4.06	40	0.625
95	C	26	11	3.11	32	0.344
96	C	87	31	7.88	42	0.738
97	C	113	31	4.17	42	0.738
98	C	143	31	3.96	42	0.738
99	C	177	31	3.26	42	0.738

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
100	B	124	26	2.98	42	0.619
101	B	102	25	3.24	42	0.595
102	C	58	11	4.50	40	0.275
103	C	30	11	1.95	32	0.344
104	C	117	31	5.06	42	0.738
105	C	143	31	3.94	42	0.738
106	C	173	31	2.80	42	0.738
107	C	207	31	2.88	42	0.738
108	A	10	4	1.09	41	0.098
109	A	10	4	1.11	41	0.098
110	B	13	6	2.09	39	0.154
111	A	4	3	1.00	31	0.097
112	A	13	10	1.58	41	0.244
113	A	14	11	1.55	41	0.268
114	B	10	4	2.26	41	0.098
115	A	10	4	1.30	41	0.098
116	A	10	4	0.96	41	0.098
117	A	14	4	0.78	43	0.093
118	A	14	4	0.88	43	0.093
119	A	10	4	0.84	41	0.098
120	A	4	3	1.00	33	0.091
121	A	18	13	1.28	43	0.302
122	A	17	13	1.26	43	0.302
123	A	18	11	1.46	43	0.256
124	B	14	4	3.24	43	0.093
125	A	14	4	1.80	43	0.093
126	A	14	4	1.28	43	0.093
127	A	18	4	0.91	43	0.093
128	A	14	4	0.89	43	0.093
129	A	10	4	0.86	41	0.098
130	A	4	3	1.00	33	0.091
131	A	22	13	1.22	43	0.302
132	A	21	14	1.39	43	0.326
133	A	21	13	1.28	43	0.302
134	A	22	11	1.36	43	0.256
135	A	22	13	1.58	43	0.302

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
136	A	18	13	1.63	43	0.302
137	A	13	10	1.66	41	0.244
138	A	9	8	1.60	33	0.242
139	C	18	8	6.32	43	0.186
140	C	22	11	2.51	43	0.256
141	C	26	11	2.09	43	0.256
142	C	30	11	1.66	43	0.256
143	A	21	14	1.51	43	0.326
144	A	17	13	1.28	43	0.302
145	A	14	11	1.39	41	0.268
146	A	4	3	1.05	33	0.091
147	C	22	11	2.71	43	0.256
148	C	26	11	1.77	43	0.256
149	C	30	11	1.73	43	0.256
150	C	34	11	1.54	43	0.256
151	A	21	13	1.21	43	0.302
152	A	18	11	1.35	43	0.256
153	B	10	4	2.26	41	0.098
154	A	4	3	1.00	33	0.091
155	C	26	11	2.19	43	0.256
156	C	30	11	1.72	43	0.256
157	C	34	11	1.45	43	0.256
158	C	38	11	1.46	43	0.256
159	A	52	13	1.15	43	0.302
160	A	44	13	1.19	43	0.302
161	B	72	14	3.56	41	0.342
162	A	15	12	1.40	33	0.364
163	B	36	19	2.26	43	0.442
164	B	40	20	2.93	43	0.465
165	C	54	11	4.58	43	0.256
166	C	62	11	2.61	43	0.256
167	C	70	11	1.88	43	0.256
168	A	83	13	1.11	45	0.289
169	A	71	13	0.87	45	0.289
170	A	44	13	0.97	43	0.302
171	A	19	13	1.26	35	0.371

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
172	B	82	27	3.13	45	0.600
173	B	60	21	2.77	45	0.467
174	B	68	20	2.41	45	0.444
175	C	86	11	5.66	45	0.244
176	C	98	11	3.10	45	0.244
177	C	110	11	2.20	45	0.244
178	A	118	13	0.82	45	0.289
179	A	83	13	0.91	45	0.289
180	A	52	13	0.90	43	0.302
181	A	23	13	1.20	35	0.371
182	B	101	28	2.62	45	0.622
183	B	83	23	2.54	45	0.511
184	B	88	21	2.35	45	0.467
185	B	100	20	2.09	45	0.444
186	B	101	28	2.54	45	0.622
187	B	82	27	3.11	45	0.600
188	B	65	24	3.82	43	0.558
189	B	45	23	5.71	35	0.657
190	C	59	29	24.74	45	0.644
191	C	83	31	9.05	45	0.689
192	C	111	31	5.49	45	0.689
193	C	143	31	4.01	45	0.689
194	B	112	28	3.10	45	0.622
195	B	89	26	3.61	45	0.578
196	B	69	25	4.10	43	0.581
197	C	24	11	3.15	35	0.314
198	C	83	31	7.81	45	0.689
199	C	107	31	4.14	45	0.689
200	C	135	31	3.94	45	0.689
201	C	167	31	3.25	45	0.689
202	B	117	26	3.00	45	0.578
203	B	97	25	3.25	45	0.556
204	C	54	11	4.54	43	0.256
205	C	28	11	1.97	35	0.314
206	C	111	31	5.04	45	0.689
207	C	135	31	3.93	45	0.689

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
208	C	163	31	2.79	45	0.689
209	C	195	31	2.87	45	0.689
210	F	0	0	N/A	0	N/A
211	F	0	0	N/A	0	N/A
212	F	0	0	N/A	0	N/A
213	F	0	0	N/A	0	N/A
214	A	6	4	1.31	47	0.085
215	F	0	0	N/A	0	N/A
216	F	0	0	N/A	0	N/A
217	F	0	0	N/A	0	N/A
218	F	0	0	N/A	0	N/A
219	F	0	0	N/A	0	N/A
220	A	6	4	1.24	47	0.085
221	F	0	0	N/A	0	N/A
222	F	0	0	N/A	0	N/A
223	F	0	0	N/A	0	N/A
224	A	1	1	1.00	35	0.029
225	A	1	1	1.00	42	0.024
226	F	0	0	N/A	0	N/A
227	F	0	0	N/A	0	N/A
228	A	1	1	1.00	40	0.025
229	A	1	1	1.00	40	0.025
230	A	1	1	1.00	38	0.026
231	A	1	1	1.00	40	0.025
232	A	1	1	1.00	40	0.025
233	A	1	1	1.00	40	0.025
234	A	1	1	1.00	40	0.025
235	A	1	1	1.00	46	0.022
236	A	1	1	1.00	50	0.020
237	A	1	1	1.00	40	0.025
238	A	1	1	1.00	46	0.022
239	A	1	1	1.00	50	0.020
240	A	1	1	1.00	40	0.025
241	A	1	1	1.00	35	0.029
242	A	1	1	1.00	35	0.029
243	A	1	1	1.00	33	0.030

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
244	A	1	1	1.00	28	0.036
245	A	1	1	1.00	35	0.029
246	A	1	1	1.00	28	0.036
247	A	1	1	1.00	33	0.030
248	A	1	1	1.00	35	0.029
249	B	20	9	2.83	43	0.209
250	B	15	9	2.33	43	0.209
251	A	11	8	1.83	43	0.186
252	A	8	6	1.33	41	0.146
253	A	0	0	0.00	0	0.000
254	A	0	0	0.00	0	0.000
255	A	2	2	1.00	40	0.050
256	A	2	2	1.00	38	0.053
257	A	3	3	1.00	33	0.091
258	A	3	3	1.00	38	0.079
259	B	17	11	2.33	51	0.216
260	A	13	10	1.83	51	0.196
261	A	10	8	1.33	49	0.163
262	A	0	0	0.00	0	0.000
263	A	0	0	0.00	0	0.000

Chapter 3

Listing of integrals

3.1 $\int (ag+bgx)^3(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\,dx$

Optimal. Leaf size=212

$$\frac{g^3i(a+bx)^4(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A-B\right)}{20b^2}+\frac{g^3i(a+bx)^4(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5b}+\frac{Bg^3i(bc-ad)^5\log}{20b^2d^4}$$

```
[Out] -1/20*B*(-a*d+b*c)^4*g^3*i*x/b/d^3+1/40*B*(-a*d+b*c)^3*g^3*i*(b*x+a)^2/b^2/
d^2-1/60*B*(-a*d+b*c)^2*g^3*i*(b*x+a)^3/b^2/d+1/5*g^3*i*(b*x+a)^4*(d*x+c)*(
A+B*ln(e*(b*x+a)/(d*x+c)))/b+1/20*(-a*d+b*c)*g^3*i*(b*x+a)^4*(A-B+B*ln(e*(b
*x+a)/(d*x+c)))/b^2+1/20*B*(-a*d+b*c)^5*g^3*i*ln(d*x+c)/b^2/d^4
```

Rubi [A] time = 0.35, antiderivative size = 232, normalized size of antiderivative = 1.09, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2528, 2525, 12, 43}

$$\frac{g^3i(a+bx)^4(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4b^2}+\frac{dg^3i(a+bx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5b^2}+\frac{Bg^3i(a+bx)^2(bc-ad)^3}{40b^2d^2}+Bg$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] -(B*(b*c - a*d)^4*g^3*i*x)/(20*b*d^3) + (B*(b*c - a*d)^3*g^3*i*(a + b*x)^2)
/(40*b^2*d^2) - (B*(b*c - a*d)^2*g^3*i*(a + b*x)^3)/(60*b^2*d) - (B*(b*c -
a*d)*g^3*i*(a + b*x)^4)/(20*b^2) + ((b*c - a*d)*g^3*i*(a + b*x)^4*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]))/(4*b^2) + (d*g^3*i*(a + b*x)^5*(A + B*Log[(e*(
a + b*x))/(c + d*x)]))/(5*b^2) + (B*(b*c - a*d)^5*g^3*i*Log[c + d*x])/(20*b
^2*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (c+dx)(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx = \int\left(\frac{(bc-ad)(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b}+\frac{d(ag+bg$$

$$=\frac{(bc-ad)\int(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{b}+\frac{d\int(ag+$$

$$=\frac{(bc-ad)g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4b^2}+\frac{dg^3(a+bx)^5\left(\right.}{}$$

$$=\frac{(bc-ad)g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4b^2}+\frac{dg^3(a+bx)^5\left(\right.}{}$$

$$=\frac{(bc-ad)g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4b^2}+\frac{dg^3(a+bx)^5\left(\right.}{}$$

$$=-\frac{B(bc-ad)^4g^3x}{20bd^3}+\frac{B(bc-ad)^3g^3(a+bx)^2}{40b^2d^2}-\frac{B(bc-ad)^2g^3}{60b^2d}$$

Mathematica [**A**] time = 0.22, size = 261, normalized size = 1.23

$$\frac{g^3i\left(24d(a+bx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+30(a+bx)^4(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-\frac{5B(bc-ad)^2\left(3d^2(a+bx)^2(ad-bc)+6b\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]
),x]
```

```
[Out] (g^3*i*(30*(b*c - a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2
4*d*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - (5*B*(b*c - a*d)^2*(
6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^
3 - 6*(b*c - a*d)^3*Log[c + d*x]))/d^4 + (2*B*(b*c - a*d)*(12*b*d*(b*c - a*
d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3 -
3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]))/d^4))/(120*b^2)
```

fricas [**B**] time = 2.37, size = 504, normalized size = 2.38

$$\frac{24\,Ab^5d^5g^3ix^5+6\left((5\,A-B)b^5cd^4+(15\,A+B)ab^4d^5\right)g^3ix^4-2\left(Bb^5c^2d^3-10\,(6\,A-B)ab^4cd^4-(60\,A+11\,B)a^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="fricas")
```

```
[Out] 1/120*(24*A*b^5*d^5*g^3*i*x^5 + 6*((5*A - B)*b^5*c*d^4 + (15*A + B)*a*b^4*d
^5)*g^3*i*x^4 - 2*(B*b^5*c^2*d^3 - 10*(6*A - B)*a*b^4*c*d^4 - (60*A + 11*B)
*a^2*b^3*d^5)*g^3*i*x^3 + 3*(B*b^5*c^3*d^2 - 5*B*a*b^4*c^2*d^3 + 5*(12*A -
B)*a^2*b^3*c*d^4 + (20*A + 9*B)*a^3*b^2*d^5)*g^3*i*x^2 - 6*(B*b^5*c^4*d - 5
*B*a*b^4*c^3*d^2 + 10*B*a^2*b^3*c^2*d^3 - 5*(4*A + B)*a^3*b^2*c*d^4 - B*a^4
*b*d^5)*g^3*i*x + 6*(5*B*a^4*b*c*d^4 - B*a^5*d^5)*g^3*i*log(b*x + a) + 6*(B
*b^5*c^5 - 5*B*a*b^4*c^4*d + 10*B*a^2*b^3*c^3*d^2 - 10*B*a^3*b^2*c^2*d^3)*g
^3*i*log(d*x + c) + 6*(4*B*b^5*d^5*g^3*i*x^5 + 20*B*a^3*b^2*c*d^4*g^3*i*x +
 5*(B*b^5*c*d^4 + 3*B*a*b^4*d^5)*g^3*i*x^4 + 20*(B*a*b^4*c*d^4 + B*a^2*b^3*
d^5)*g^3*i*x^3 + 10*(3*B*a^2*b^3*c*d^4 + B*a^3*b^2*d^5)*g^3*i*x^2)*log((b*e
*x + a*e)/(d*x + c)))/(b^2*d^4)
```

giac [B] time = 1.59, size = 5682, normalized size = 26.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="giac")
```

```
[Out] -1/120*(6*B*b^11*c^6*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 36*B
*a*b^10*c^5*d*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 90*B*a^2*b^
9*c^4*d^2*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 120*B*a^3*b^8*c
^3*d^3*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 90*B*a^4*b^7*c^2*d
^4*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 36*B*a^5*b^6*c*d^5*g^3
*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 6*B*a^6*b^5*d^6*g^3*i*e^6*lo
g(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 30*(b*x*e + a*e)*B*b^10*c^6*d*g^3*i*e
^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 180*(b*x*e + a*e)*B*a*
b^9*c^5*d^2*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 450
*(b*x*e + a*e)*B*a^2*b^8*c^4*d^3*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x
+ c))/(d*x + c) + 600*(b*x*e + a*e)*B*a^3*b^7*c^3*d^4*g^3*i*e^5*log(-b*e +
(b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 450*(b*x*e + a*e)*B*a^4*b^6*c^2*d^5*
g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 180*(b*x*e + a*
e)*B*a^5*b^5*c*d^6*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c
) - 30*(b*x*e + a*e)*B*a^6*b^4*d^7*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*
x + c))/(d*x + c) + 60*(b*x*e + a*e)^2*B*b^9*c^6*d^2*g^3*i*e^4*log(-b*e + (
b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 360*(b*x*e + a*e)^2*B*a*b^8*c^5*d^3
*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 900*(b*x*e +
 a*e)^2*B*a^2*b^7*c^4*d^4*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(
d*x + c)^2 - 1200*(b*x*e + a*e)^2*B*a^3*b^6*c^3*d^5*g^3*i*e^4*log(-b*e + (b
*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 900*(b*x*e + a*e)^2*B*a^4*b^5*c^2*d^
6*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 360*(b*x*e
+ a*e)^2*B*a^5*b^4*c*d^7*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d
*x + c)^2 + 60*(b*x*e + a*e)^2*B*a^6*b^3*d^8*g^3*i*e^4*log(-b*e + (b*x*e +
a*e)*d/(d*x + c))/(d*x + c)^2 - 60*(b*x*e + a*e)^3*B*b^8*c^6*d^3*g^3*i*e^3*
log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 360*(b*x*e + a*e)^3*B*a
*b^7*c^5*d^4*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 -
900*(b*x*e + a*e)^3*B*a^2*b^6*c^4*d^5*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/
(d*x + c))/(d*x + c)^3 + 1200*(b*x*e + a*e)^3*B*a^3*b^5*c^3*d^6*g^3*i*e^3*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 900*(b*x*e + a*e)^3*B*a^
4*b^4*c^2*d^7*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 +
 360*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(
d*x + c))/(d*x + c)^3 - 60*(b*x*e + a*e)^3*B*a^6*b^2*d^9*g^3*i*e^3*log(-b*e
 + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 30*(b*x*e + a*e)^4*B*b^7*c^6*d^
4*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 180*(b*x*e
```

```
+ a*e)^4*B*a*b^6*c^5*d^5*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d
*x + c)^4 + 450*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g^3*i*e^2*log(-b*e + (b*x
*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 600*(b*x*e + a*e)^4*B*a^3*b^4*c^3*d^7*
g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 450*(b*x*e +
a*e)^4*B*a^4*b^3*c^2*d^8*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d
*x + c)^4 - 180*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g^3*i*e^2*log(-b*e + (b*x*e
 + a*e)*d/(d*x + c))/(d*x + c)^4 + 30*(b*x*e + a*e)^4*B*a^6*b*d^10*g^3*i*e^
2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 6*(b*x*e + a*e)^5*B*b
^6*c^6*d^5*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 36*(
b*x*e + a*e)^5*B*a*b^5*c^5*d^6*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c)
)/(d*x + c)^5 - 90*(b*x*e + a*e)^5*B*a^2*b^4*c^4*d^7*g^3*i*e*log(-b*e + (b*
x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 120*(b*x*e + a*e)^5*B*a^3*b^3*c^3*d^8
*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 90*(b*x*e + a*
e)^5*B*a^4*b^2*c^2*d^9*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x +
 c)^5 + 36*(b*x*e + a*e)^5*B*a^5*b*c*d^10*g^3*i*e*log(-b*e + (b*x*e + a*e)*
d/(d*x + c))/(d*x + c)^5 - 6*(b*x*e + a*e)^5*B*a^6*d^11*g^3*i*e*log(-b*e +
(b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 30*(b*x*e + a*e)^4*B*b^7*c^6*d^4*g
^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 180*(b*x*e + a*e)^4*B*a
*b^6*c^5*d^5*g^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 450*(b*x*
e + a*e)^4*B*a^2*b^5*c^4*d^6*g^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x +
c)^4 + 600*(b*x*e + a*e)^4*B*a^3*b^4*c^3*d^7*g^3*i*e^2*log((b*x*e + a*e)/(d
*x + c))/(d*x + c)^4 - 450*(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g^3*i*e^2*log(
(b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 180*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*
g^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 30*(b*x*e + a*e)^4*B*a
^6*b*d^10*g^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 6*(b*x*e + a
*e)^5*B*b^6*c^6*d^5*g^3*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 36*(
b*x*e + a*e)^5*B*a*b^5*c^5*d^6*g^3*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x +
c)^5 + 90*(b*x*e + a*e)^5*B*a^2*b^4*c^4*d^7*g^3*i*e*log((b*x*e + a*e)/(d*x
+ c))/(d*x + c)^5 - 120*(b*x*e + a*e)^5*B*a^3*b^3*c^3*d^8*g^3*i*e*log((b*x*
e + a*e)/(d*x + c))/(d*x + c)^5 + 90*(b*x*e + a*e)^5*B*a^4*b^2*c^2*d^9*g^3*
i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 36*(b*x*e + a*e)^5*B*a^5*b*c
*d^10*g^3*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 6*(b*x*e + a*e)^5*
B*a^6*d^11*g^3*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 6*A*b^11*c^6*
g^3*i*e^6 + 5*B*b^11*c^6*g^3*i*e^6 - 36*A*a*b^10*c^5*d*g^3*i*e^6 - 30*B*a*b
^10*c^5*d*g^3*i*e^6 + 90*A*a^2*b^9*c^4*d^2*g^3*i*e^6 + 75*B*a^2*b^9*c^4*d^2
*g^3*i*e^6 - 120*A*a^3*b^8*c^3*d^3*g^3*i*e^6 - 100*B*a^3*b^8*c^3*d^3*g^3*i*
e^6 + 90*A*a^4*b^7*c^2*d^4*g^3*i*e^6 + 75*B*a^4*b^7*c^2*d^4*g^3*i*e^6 - 36*
A*a^5*b^6*c*d^5*g^3*i*e^6 - 30*B*a^5*b^6*c*d^5*g^3*i*e^6 + 6*A*a^6*b^5*d^6*
g^3*i*e^6 + 5*B*a^6*b^5*d^6*g^3*i*e^6 - 30*(b*x*e + a*e)*A*b^10*c^6*d*g^3*i
*e^5/(d*x + c) - 19*(b*x*e + a*e)*B*b^10*c^6*d*g^3*i*e^5/(d*x + c) + 180*(b
*x*e + a*e)*A*a*b^9*c^5*d^2*g^3*i*e^5/(d*x + c) + 114*(b*x*e + a*e)*B*a*b^9
*c^5*d^2*g^3*i*e^5/(d*x + c) - 450*(b*x*e + a*e)*A*a^2*b^8*c^4*d^3*g^3*i*e^
5/(d*x + c) - 285*(b*x*e + a*e)*B*a^2*b^8*c^4*d^3*g^3*i*e^5/(d*x + c) + 600
*(b*x*e + a*e)*A*a^3*b^7*c^3*d^4*g^3*i*e^5/(d*x + c) + 380*(b*x*e + a*e)*B*
a^3*b^7*c^3*d^4*g^3*i*e^5/(d*x + c) - 450*(b*x*e + a*e)*A*a^4*b^6*c^2*d^5*g
^3*i*e^5/(d*x + c) - 285*(b*x*e + a*e)*B*a^4*b^6*c^2*d^5*g^3*i*e^5/(d*x + c
) + 180*(b*x*e + a*e)*A*a^5*b^5*c*d^6*g^3*i*e^5/(d*x + c) + 114*(b*x*e + a*
e)*B*a^5*b^5*c*d^6*g^3*i*e^5/(d*x + c) - 30*(b*x*e + a*e)*A*a^6*b^4*d^7*g^3
*i*e^5/(d*x + c) - 19*(b*x*e + a*e)*B*a^6*b^4*d^7*g^3*i*e^5/(d*x + c) + 60*
(b*x*e + a*e)^2*A*b^9*c^6*d^2*g^3*i*e^4/(d*x + c)^2 + 23*(b*x*e + a*e)^2*B*
b^9*c^6*d^2*g^3*i*e^4/(d*x + c)^2 - 360*(b*x*e + a*e)^2*A*a*b^8*c^5*d^3*g^3
*i*e^4/(d*x + c)^2 - 138*(b*x*e + a*e)^2*B*a*b^8*c^5*d^3*g^3*i*e^4/(d*x + c
)^2 + 900*(b*x*e + a*e)^2*A*a^2*b^7*c^4*d^4*g^3*i*e^4/(d*x + c)^2 + 345*(b*
x*e + a*e)^2*B*a^2*b^7*c^4*d^4*g^3*i*e^4/(d*x + c)^2 - 1200*(b*x*e + a*e)^2
*A*a^3*b^6*c^3*d^5*g^3*i*e^4/(d*x + c)^2 - 460*(b*x*e + a*e)^2*B*a^3*b^6*c^
3*d^5*g^3*i*e^4/(d*x + c)^2 + 900*(b*x*e + a*e)^2*A*a^4*b^5*c^2*d^6*g^3*i*e
^4/(d*x + c)^2 + 345*(b*x*e + a*e)^2*B*a^4*b^5*c^2*d^6*g^3*i*e^4/(d*x + c)^
2 - 360*(b*x*e + a*e)^2*A*a^5*b^4*c*d^7*g^3*i*e^4/(d*x + c)^2 - 138*(b*x*e
+ a*e)^2*B*a^5*b^4*c*d^7*g^3*i*e^4/(d*x + c)^2 + 60*(b*x*e + a*e)^2*A*a^6*b
```

```
^3*d^8*g^3*i*e^4/(d*x + c)^2 + 23*(b*x*e + a*e)^2*B*a^6*b^3*d^8*g^3*i*e^4/(
d*x + c)^2 - 60*(b*x*e + a*e)^3*A*b^8*c^6*d^3*g^3*i*e^3/(d*x + c)^3 - 3*(b*
x*e + a*e)^3*B*b^8*c^6*d^3*g^3*i*e^3/(d*x + c)^3 + 360*(b*x*e + a*e)^3*A*a*
b^7*c^5*d^4*g^3*i*e^3/(d*x + c)^3 + 18*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g^3*
i*e^3/(d*x + c)^3 - 900*(b*x*e + a*e)^3*A*a^2*b^6*c^4*d^5*g^3*i*e^3/(d*x +
c)^3 - 45*(b*x*e + a*e)^3*B*a^2*b^6*c^4*d^5*g^3*i*e^3/(d*x + c)^3 + 1200*(b
*x*e + a*e)^3*A*a^3*b^5*c^3*d^6*g^3*i*e^3/(d*x + c)^3 + 60*(b*x*e + a*e)^3*
B*a^3*b^5*c^3*d^6*g^3*i*e^3/(d*x + c)^3 - 900*(b*x*e + a*e)^3*A*a^4*b^4*c^2
*d^7*g^3*i*e^3/(d*x + c)^3 - 45*(b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7*g^3*i*e^3
/(d*x + c)^3 + 360*(b*x*e + a*e)^3*A*a^5*b^3*c*d^8*g^3*i*e^3/(d*x + c)^3 +
18*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g^3*i*e^3/(d*x + c)^3 - 60*(b*x*e + a*e)
^3*A*a^6*b^2*d^9*g^3*i*e^3/(d*x + c)^3 - 3*(b*x*e + a*e)^3*B*a^6*b^2*d^9*g^
3*i*e^3/(d*x + c)^3 - 6*(b*x*e + a*e)^4*B*b^7*c^6*d^4*g^3*i*e^2/(d*x + c)^4
 + 36*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5*g^3*i*e^2/(d*x + c)^4 - 90*(b*x*e + a
*e)^4*B*a^2*b^5*c^4*d^6*g^3*i*e^2/(d*x + c)^4 + 120*(b*x*e + a*e)^4*B*a^3*b
^4*c^3*d^7*g^3*i*e^2/(d*x + c)^4 - 90*(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g^3
*i*e^2/(d*x + c)^4 + 36*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g^3*i*e^2/(d*x + c)
^4 - 6*(b*x*e + a*e)^4*B*a^6*b*d^10*g^3*i*e^2/(d*x + c)^4)*(b*c/((b*c*e - a
*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^7*d^4*e^5 - 5*(b
*x*e + a*e)*b^6*d^5*e^4/(d*x + c) + 10*(b*x*e + a*e)^2*b^5*d^6*e^3/(d*x + c
)^2 - 10*(b*x*e + a*e)^3*b^4*d^7*e^2/(d*x + c)^3 + 5*(b*x*e + a*e)^4*b^3*d^
8*e/(d*x + c)^4 - (b*x*e + a*e)^5*b^2*d^9/(d*x + c)^5)
```

maple [B] time = 0.18, size = 7284, normalized size = 34.36

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

```
[Out] result too large to display
```

maxima [B] time = 1.39, size = 1022, normalized size = 4.82

$$\frac{1}{5}Ab^3dg^3ix^5+\frac{1}{4}Ab^3cg^3ix^4+\frac{3}{4}Aab^2dg^3ix^4+Aab^2cg^3ix^3+Aa^2bdg^3ix^3+\frac{3}{2}Aa^2bcg^3ix^2+\frac{1}{2}Aa^3dg^3ix^2+\Bigg(x\log\Bigg(\frac{b}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="maxima")
```

```
[Out] 1/5*A*b^3*d*g^3*i*x^5 + 1/4*A*b^3*c*g^3*i*x^4 + 3/4*A*a*b^2*d*g^3*i*x^4 + A
*a*b^2*c*g^3*i*x^3 + A*a^2*b*d*g^3*i*x^3 + 3/2*A*a^2*b*c*g^3*i*x^2 + 1/2*A*
a^3*d*g^3*i*x^2 + (x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/
b - c*log(d*x + c)/d)*B*a^3*c*g^3*i + 3/2*(x^2*log(b*e*x/(d*x + c) + a*e/(d
*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d
))*B*a^2*b*c*g^3*i + 1/2*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^
3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*
(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a*b^2*c*g^3*i + 1/24*(6*x^4*log(b*e*x/(
d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4
 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*
c^3 - a^3*d^3)*x)/(b^3*d^3))*B*b^3*c*g^3*i + 1/2*(x^2*log(b*e*x/(d*x + c) +
 a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)
*x/(b*d))*B*a^3*d*g^3*i + 1/2*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) +
 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2
 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a^2*b*d*g^3*i + 1/8*(6*x^4*log(b*e
*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)
/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(
b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a*b^2*d*g^3*i + 1/60*(12*x^5*log(b*e*x/(
```

```
d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d
^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6
*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*B*b^3*d
*g^3*i + A*a^3*c*g^3*i*x
```

mupad [B] time = 5.38, size = 1195, normalized size = 5.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] x*((a*c*(((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d - B*b*
c))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d) - (b*g^3*i*(24*A*a^2*
d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d - 2*B*a*b*c*d))/
(4*d) + A*a*b^2*c*g^3*i))/(b*d) - ((20*a*d + 20*b*c)*(((20*a*d + 20*b*c)*((
(20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d - B*b*c))/5 - (A
*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*
b^2*c^2 + 3*B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d - 2*B*a*b*c*d))/(4*d) + A*
a*b^2*c*g^3*i))/(20*b*d) - (a*c*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d -
B*b*c))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(b*d) + (a*g^3*i*(4*A*a^2*
d^2 + 4*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 12*A*a*b*c*d))/d))/(20*b*d) + (
a^2*g^3*i*(2*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 - 3*B*b^2*c^2 + 16*A*a*b*
c*d + 2*B*a*b*c*d))/(2*b*d)) + x^4*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d
 - B*b*c))/20 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/80) - x^3*(((20*a*d + 20*b*
c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d - B*b*c))/5 - (A*b^2*g^3*i*(20*
a*d + 20*b*c))/20))/(60*b*d) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a
^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d - 2*B*a*b*c*d))/(12*d) + (A*a*b^2*c*g^3*i
)/3) + x^2*(((20*a*d + 20*b*c)*(((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d +
10*A*b*c + B*a*d - B*b*c))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d
) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2 - B*b^2*c^2 + 32*A*a
*b*c*d - 2*B*a*b*c*d))/(4*d) + A*a*b^2*c*g^3*i))/(40*b*d) - (a*c*((b^2*g^3*
i*(20*A*a*d + 10*A*b*c + B*a*d - B*b*c))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c)
)/20))/(2*b*d) + (a*g^3*i*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^
2 + 12*A*a*b*c*d))/(2*d)) + log((e*(a + b*x))/(c + d*x))*((B*a^2*g^3*i*x^2*
(a*d + 3*b*c))/2 + (B*b^2*g^3*i*x^4*(3*a*d + b*c))/4 + B*a^3*c*g^3*i*x + (B
*b^3*d*g^3*i*x^5)/5 + B*a*b*g^3*i*x^3*(a*d + b*c)) - (log(a + b*x)*(B*a^5*d
*g^3*i - 5*B*a^4*b*c*g^3*i))/(20*b^2) + (log(c + d*x)*(B*b^3*c^5*g^3*i - 10
*B*a^3*c^2*d^3*g^3*i - 5*B*a*b^2*c^4*d*g^3*i + 10*B*a^2*b*c^3*d^2*g^3*i))/(
20*d^4) + (A*b^3*d*g^3*i*x^5)/5
```

sympy [B] time = 7.95, size = 1158, normalized size = 5.46

$$\frac{Ab^3dg^3ix^5}{5} - \frac{Ba^4g^3i\,(ad-5bc)\log\left(x + \frac{Ba^5cd^4g^3i + \frac{Ba^5d^4g^3i(ad-5bc)}{b} - 15Ba^4bc^2d^3g^3i - Ba^4cd^3g^3i(ad-5bc) + 10Ba^3b^2c^3d^2g^3i - 5Ba^2b^3c^4dg^3i +}{Ba^5d^5g^3i - 5Ba^4bcd^4g^3i - 10Ba^3b^2c^2d^3g^3i + 10Ba^2b^3c^3d^2g^3i - 5Bab^4c^4dg^3i + Bb^5c^5g^3i}\right.}{20b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*b**3*d*g**3*i*x**5/5 - B*a**4*g**3*i*(a*d - 5*b*c)*log(x + (B*a**5*c*d**4
*g**3*i + B*a**5*d**4*g**3*i*(a*d - 5*b*c)/b - 15*B*a**4*b*c**2*d**3*g**3*i
 - B*a**4*c*d**3*g**3*i*(a*d - 5*b*c) + 10*B*a**3*b**2*c**3*d**2*g**3*i - 5
*B*a**2*b**3*c**4*d*g**3*i + B*a*b**4*c**5*g**3*i)/(B*a**5*d**5*g**3*i - 5*
B*a**4*b*c*d**4*g**3*i - 10*B*a**3*b**2*c**2*d**3*g**3*i + 10*B*a**2*b**3*c
**3*d**2*g**3*i - 5*B*a*b**4*c**4*d*g**3*i + B*b**5*c**5*g**3*i))/(20*b**2)
 - B*c**2*g**3*i*(10*a**3*d**3 - 10*a**2*b*c*d**2 + 5*a*b**2*c**2*d - b**3*
c**3)*log(x + (B*a**5*c*d**4*g**3*i - 15*B*a**4*b*c**2*d**3*g**3*i + 10*B*a
```

```
**3*b**2*c**3*d**2*g**3*i - 5*B*a**2*b**3*c**4*d*g**3*i + B*a*b**4*c**5*g**
3*i + B*a*b*c**2*g**3*i*(10*a**3*d**3 - 10*a**2*b*c*d**2 + 5*a*b**2*c**2*d
- b**3*c**3) - B*b**2*c**3*g**3*i*(10*a**3*d**3 - 10*a**2*b*c*d**2 + 5*a*b*
*2*c**2*d - b**3*c**3)/d)/(B*a**5*d**5*g**3*i - 5*B*a**4*b*c*d**4*g**3*i -
10*B*a**3*b**2*c**2*d**3*g**3*i + 10*B*a**2*b**3*c**3*d**2*g**3*i - 5*B*a*b
**4*c**4*d*g**3*i + B*b**5*c**5*g**3*i))/(20*d**4) + x**4*(3*A*a*b**2*d*g**
3*i/4 + A*b**3*c*g**3*i/4 + B*a*b**2*d*g**3*i/20 - B*b**3*c*g**3*i/20) + x*
*3*(A*a**2*b*d*g**3*i + A*a*b**2*c*g**3*i + 11*B*a**2*b*d*g**3*i/60 - B*a*b
**2*c*g**3*i/6 - B*b**3*c**2*g**3*i/(60*d)) + x**2*(A*a**3*d*g**3*i/2 + 3*A
*a**2*b*c*g**3*i/2 + 9*B*a**3*d*g**3*i/40 - B*a**2*b*c*g**3*i/8 - B*a*b**2*
c**2*g**3*i/(8*d) + B*b**3*c**3*g**3*i/(40*d**2)) + x*(A*a**3*c*g**3*i + B*
a**4*d*g**3*i/(20*b) + B*a**3*c*g**3*i/4 - B*a**2*b*c**2*g**3*i/(2*d) + B*a
*b**2*c**3*g**3*i/(4*d**2) - B*b**3*c**4*g**3*i/(20*d**3)) + (B*a**3*c*g**3
*i*x + B*a**3*d*g**3*i*x**2/2 + 3*B*a**2*b*c*g**3*i*x**2/2 + B*a**2*b*d*g**
3*i*x**3 + B*a*b**2*c*g**3*i*x**3 + 3*B*a*b**2*d*g**3*i*x**4/4 + B*b**3*c*g
**3*i*x**4/4 + B*b**3*d*g**3*i*x**5/5)*log(e*(a + b*x)/(c + d*x))
```

3.2 $\int (ag+bgx)^2(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\,dx$

Optimal. Leaf size=180

$$\frac{g^2i(a+bx)^3(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A-B\right)}{12b^2}+\frac{g^2i(a+bx)^3(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4b}-\frac{Bg^2i(bc-ad)^4\log(c}{12b^2d^3}$$

```
[Out] 1/12*B*(-a*d+b*c)^3*g^2*i*x/b/d^2-1/24*B*(-a*d+b*c)^2*g^2*i*(b*x+a)^2/b^2/d
+1/4*g^2*i*(b*x+a)^3*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b+1/12*(-a*d+b*c)*
g^2*i*(b*x+a)^3*(A-B+B*ln(e*(b*x+a)/(d*x+c)))/b^2-1/12*B*(-a*d+b*c)^4*g^2*i
*ln(d*x+c)/b^2/d^3
```

Rubi [A] time = 0.29, antiderivative size = 200, normalized size of antiderivative = 1.11, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {2528, 2525, 12, 43}

$$\frac{g^2i(a+bx)^3(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^2}+\frac{dg^2i(a+bx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4b^2}-\frac{Bg^2i(bc-ad)^4\log(c+dx)}{12b^2d^3}-\frac{Bg^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] (B*(b*c - a*d)^3*g^2*i*x)/(12*b*d^2) - (B*(b*c - a*d)^2*g^2*i*(a + b*x)^2)/
(24*b^2*d) - (B*(b*c - a*d)*g^2*i*(a + b*x)^3)/(12*b^2) + ((b*c - a*d)*g^2*
i*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^2) + (d*g^2*i*(a +
 b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(4*b^2) - (B*(b*c - a*d)^4*g^
2*i*Log[c + d*x])/(12*b^2*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (2c + 2dx)(ag + bgx)^2 \left(A + B\log\left(\frac{e(a+bx)}{c+dx}\right)\right) dx = \int \left(\frac{2(bc-ad)(ag+bgx)^2 \left(A + B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b} + \frac{2d(\cdots}{\cdots} \right.$$

$$= \frac{(2(bc-ad)) \int (ag+bgx)^2 \left(A + B\log\left(\frac{e(a+bx)}{c+dx}\right)\right) dx}{b} + \cdots$$

$$= \frac{2(bc-ad)g^2(a+bx)^3 \left(A + B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^2} + \frac{dg^2(a+\cdots}{\cdots}$$

$$= \frac{2(bc-ad)g^2(a+bx)^3 \left(A + B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^2} + \frac{dg^2(a+\cdots}{\cdots}$$

$$= \frac{2(bc-ad)g^2(a+bx)^3 \left(A + B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^2} + \frac{dg^2(a+\cdots}{\cdots}$$

$$= \frac{B(bc-ad)^3 g^2 x}{6bd^2} - \frac{B(bc-ad)^2 g^2 (a+bx)^2}{12b^2 d} - \frac{B(bc-ad\cdots}{6\cdots}$$

Mathematica [A] time = 0.16, size = 217, normalized size = 1.21

$$\frac{g^2 i \left(6d(a+bx)^4 \left(B\log\left(\frac{e(a+bx)}{c+dx}\right) + A\right) + 8(a+bx)^3(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right) + A\right) + \frac{4B(bc-ad)^2\left(2bdx(bc-ad) - 2(bc-ad\cdots\right.}{d^3}\cdots}{24b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]
),x]
```

```
[Out] (g^2*i*(8*(b*c - a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*
d*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + (4*B*(b*c - a*d)^2*(2*
b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]))/d^3 -
(B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 +
2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]))/d^3))/(24*b^2)
```

fricas [B] time = 1.05, size = 370, normalized size = 2.06

$$\frac{6\,Ab^4d^4g^2ix^4 + 2\left((4\,A - B)b^4cd^3 + (8\,A + B)ab^3d^4\right)g^2ix^3 - \left(Bb^4c^2d^2 - 4\,(6\,A - B)ab^3cd^3 - (12\,A + 5\,B)a^2b^2d\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="fricas")
```

```
[Out] 1/24*(6*A*b^4*d^4*g^2*i*x^4 + 2*((4*A - B)*b^4*c*d^3 + (8*A + B)*a*b^3*d^4)
*g^2*i*x^3 - (B*b^4*c^2*d^2 - 4*(6*A - B)*a*b^3*c*d^3 - (12*A + 5*B)*a^2*b^
2*d^4)*g^2*i*x^2 + 2*(B*b^4*c^3*d - 4*B*a*b^3*c^2*d^2 + 2*(6*A + B)*a^2*b^2
*c*d^3 + B*a^3*b*d^4)*g^2*i*x + 2*(4*B*a^3*b*c*d^3 - B*a^4*d^4)*g^2*i*log(b
*x + a) - 2*(B*b^4*c^4 - 4*B*a*b^3*c^3*d + 6*B*a^2*b^2*c^2*d^2)*g^2*i*log(d
*x + c) + 2*(3*B*b^4*d^4*g^2*i*x^4 + 12*B*a^2*b^2*c*d^3*g^2*i*x + 4*(B*b^4*
c*d^3 + 2*B*a*b^3*d^4)*g^2*i*x^3 + 6*(2*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*g^2*
i*x^2)*log((b*e*x + a*e)/(d*x + c)))/(b^2*d^3)
```

giac [B] time = 1.19, size = 3993, normalized size = 22.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="giac")
```

```
[Out] 1/24*(2*B*b^9*c^5*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 10*B*a*
b^8*c^4*d*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 20*B*a^2*b^7*c^
3*d^2*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 20*B*a^3*b^6*c^2*d^
3*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 10*B*a^4*b^5*c*d^4*g^2*
i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 2*B*a^5*b^4*d^5*g^2*i*e^5*log
(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 8*(b*x*e + a*e)*B*b^8*c^5*d*g^2*i*e^4*
log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 40*(b*x*e + a*e)*B*a*b^7*
c^4*d^2*g^2*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 80*(b*x
*e + a*e)*B*a^2*b^6*c^3*d^3*g^2*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))
/(d*x + c) + 80*(b*x*e + a*e)*B*a^3*b^5*c^2*d^4*g^2*i*e^4*log(-b*e + (b*x*e
 + a*e)*d/(d*x + c))/(d*x + c) - 40*(b*x*e + a*e)*B*a^4*b^4*c*d^5*g^2*i*e^4
*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 8*(b*x*e + a*e)*B*a^5*b^
3*d^6*g^2*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 12*(b*x*e
 + a*e)^2*B*b^7*c^5*d^2*g^2*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*
x + c)^2 - 60*(b*x*e + a*e)^2*B*a*b^6*c^4*d^3*g^2*i*e^3*log(-b*e + (b*x*e +
 a*e)*d/(d*x + c))/(d*x + c)^2 + 120*(b*x*e + a*e)^2*B*a^2*b^5*c^3*d^4*g^2*
i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 120*(b*x*e + a*e)
^2*B*a^3*b^4*c^2*d^5*g^2*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x +
 c)^2 + 60*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*g^2*i*e^3*log(-b*e + (b*x*e + a*
e)*d/(d*x + c))/(d*x + c)^2 - 12*(b*x*e + a*e)^2*B*a^5*b^2*d^7*g^2*i*e^3*lo
g(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 8*(b*x*e + a*e)^3*B*b^6*c
^5*d^3*g^2*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 40*(b*
x*e + a*e)^3*B*a*b^5*c^4*d^4*g^2*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c)
)/(d*x + c)^3 - 80*(b*x*e + a*e)^3*B*a^2*b^4*c^3*d^5*g^2*i*e^2*log(-b*e + (
b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 80*(b*x*e + a*e)^3*B*a^3*b^3*c^2*d^
6*g^2*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 40*(b*x*e +
 a*e)^3*B*a^4*b^2*c*d^7*g^2*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*
x + c)^3 + 8*(b*x*e + a*e)^3*B*a^5*b*d^8*g^2*i*e^2*log(-b*e + (b*x*e + a*e)
*d/(d*x + c))/(d*x + c)^3 + 2*(b*x*e + a*e)^4*B*b^5*c^5*d^4*g^2*i*e*log(-b*
e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 10*(b*x*e + a*e)^4*B*a*b^4*c^4
*d^5*g^2*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 20*(b*x*e
+ a*e)^4*B*a^2*b^3*c^3*d^6*g^2*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d
*x + c)^4 - 20*(b*x*e + a*e)^4*B*a^3*b^2*c^2*d^7*g^2*i*e*log(-b*e + (b*x*e
+ a*e)*d/(d*x + c))/(d*x + c)^4 + 10*(b*x*e + a*e)^4*B*a^4*b*c*d^8*g^2*i*e*
log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 2*(b*x*e + a*e)^4*B*a^5
*d^9*g^2*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 8*(b*x*e +
 a*e)^3*B*b^6*c^5*d^3*g^2*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 -
40*(b*x*e + a*e)^3*B*a*b^5*c^4*d^4*g^2*i*e^2*log((b*x*e + a*e)/(d*x + c))/(
d*x + c)^3 + 80*(b*x*e + a*e)^3*B*a^2*b^4*c^3*d^5*g^2*i*e^2*log((b*x*e + a*
e)/(d*x + c))/(d*x + c)^3 - 80*(b*x*e + a*e)^3*B*a^3*b^3*c^2*d^6*g^2*i*e^2*
log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 40*(b*x*e + a*e)^3*B*a^4*b^2*c*d
^7*g^2*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 8*(b*x*e + a*e)^3*B
*a^5*b*d^8*g^2*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 2*(b*x*e +
a*e)^4*B*b^5*c^5*d^4*g^2*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 10*
(b*x*e + a*e)^4*B*a*b^4*c^4*d^5*g^2*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x +
 c)^4 - 20*(b*x*e + a*e)^4*B*a^2*b^3*c^3*d^6*g^2*i*e*log((b*x*e + a*e)/(d*x
 + c))/(d*x + c)^4 + 20*(b*x*e + a*e)^4*B*a^3*b^2*c^2*d^7*g^2*i*e*log((b*x*
e + a*e)/(d*x + c))/(d*x + c)^4 - 10*(b*x*e + a*e)^4*B*a^4*b*c*d^8*g^2*i*e*
log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 2*(b*x*e + a*e)^4*B*a^5*d^9*g^2*
i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 2*A*b^9*c^5*g^2*i*e^5 + B*b^
9*c^5*g^2*i*e^5 - 10*A*a*b^8*c^4*d*g^2*i*e^5 - 5*B*a*b^8*c^4*d*g^2*i*e^5 +
20*A*a^2*b^7*c^3*d^2*g^2*i*e^5 + 10*B*a^2*b^7*c^3*d^2*g^2*i*e^5 - 20*A*a^3*
b^6*c^2*d^3*g^2*i*e^5 - 10*B*a^3*b^6*c^2*d^3*g^2*i*e^5 + 10*A*a^4*b^5*c*d^4
*g^2*i*e^5 + 5*B*a^4*b^5*c*d^4*g^2*i*e^5 - 2*A*a^5*b^4*d^5*g^2*i*e^5 - B*a^
5*b^4*d^5*g^2*i*e^5 - 8*(b*x*e + a*e)*A*b^8*c^5*d*g^2*i*e^4/(d*x + c) - 2*(
```

```
b*x*e + a*e)*B*b^8*c^5*d*g^2*i*e^4/(d*x + c) + 40*(b*x*e + a*e)*A*a*b^7*c^4
*d^2*g^2*i*e^4/(d*x + c) + 10*(b*x*e + a*e)*B*a*b^7*c^4*d^2*g^2*i*e^4/(d*x
+ c) - 80*(b*x*e + a*e)*A*a^2*b^6*c^3*d^3*g^2*i*e^4/(d*x + c) - 20*(b*x*e +
 a*e)*B*a^2*b^6*c^3*d^3*g^2*i*e^4/(d*x + c) + 80*(b*x*e + a*e)*A*a^3*b^5*c^
2*d^4*g^2*i*e^4/(d*x + c) + 20*(b*x*e + a*e)*B*a^3*b^5*c^2*d^4*g^2*i*e^4/(d
*x + c) - 40*(b*x*e + a*e)*A*a^4*b^4*c*d^5*g^2*i*e^4/(d*x + c) - 10*(b*x*e
+ a*e)*B*a^4*b^4*c*d^5*g^2*i*e^4/(d*x + c) + 8*(b*x*e + a*e)*A*a^5*b^3*d^6*
g^2*i*e^4/(d*x + c) + 2*(b*x*e + a*e)*B*a^5*b^3*d^6*g^2*i*e^4/(d*x + c) + 1
2*(b*x*e + a*e)^2*A*b^7*c^5*d^2*g^2*i*e^3/(d*x + c)^2 - (b*x*e + a*e)^2*B*b
^7*c^5*d^2*g^2*i*e^3/(d*x + c)^2 - 60*(b*x*e + a*e)^2*A*a*b^6*c^4*d^3*g^2*i
*e^3/(d*x + c)^2 + 5*(b*x*e + a*e)^2*B*a*b^6*c^4*d^3*g^2*i*e^3/(d*x + c)^2
+ 120*(b*x*e + a*e)^2*A*a^2*b^5*c^3*d^4*g^2*i*e^3/(d*x + c)^2 - 10*(b*x*e +
 a*e)^2*B*a^2*b^5*c^3*d^4*g^2*i*e^3/(d*x + c)^2 - 120*(b*x*e + a*e)^2*A*a^3
*b^4*c^2*d^5*g^2*i*e^3/(d*x + c)^2 + 10*(b*x*e + a*e)^2*B*a^3*b^4*c^2*d^5*g
^2*i*e^3/(d*x + c)^2 + 60*(b*x*e + a*e)^2*A*a^4*b^3*c*d^6*g^2*i*e^3/(d*x +
c)^2 - 5*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*g^2*i*e^3/(d*x + c)^2 - 12*(b*x*e
+ a*e)^2*A*a^5*b^2*d^7*g^2*i*e^3/(d*x + c)^2 + (b*x*e + a*e)^2*B*a^5*b^2*d^
7*g^2*i*e^3/(d*x + c)^2 + 2*(b*x*e + a*e)^3*B*b^6*c^5*d^3*g^2*i*e^2/(d*x +
c)^3 - 10*(b*x*e + a*e)^3*B*a*b^5*c^4*d^4*g^2*i*e^2/(d*x + c)^3 + 20*(b*x*e
 + a*e)^3*B*a^2*b^4*c^3*d^5*g^2*i*e^2/(d*x + c)^3 - 20*(b*x*e + a*e)^3*B*a^
3*b^3*c^2*d^6*g^2*i*e^2/(d*x + c)^3 + 10*(b*x*e + a*e)^3*B*a^4*b^2*c*d^7*g^
2*i*e^2/(d*x + c)^3 - 2*(b*x*e + a*e)^3*B*a^5*b*d^8*g^2*i*e^2/(d*x + c)^3)*
(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^
6*d^3*e^4 - 4*(b*x*e + a*e)*b^5*d^4*e^3/(d*x + c) + 6*(b*x*e + a*e)^2*b^4*d
^5*e^2/(d*x + c)^2 - 4*(b*x*e + a*e)^3*b^3*d^6*e/(d*x + c)^3 + (b*x*e + a*e
)^4*b^2*d^7/(d*x + c)^4)
```

maple [B] time = 0.16, size = 4593, normalized size = 25.52

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

```
[Out] 1/12/d^3*B*g^2*i*b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^4+1/12*d*B*
g^2*i/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^4+1/2/d*B*g^2*i*ln(-b*
e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*c^2-1/3*B*g^2*i/b*ln(-b*e+(b/d*e+(a*
d-b*c)/(d*x+c)/d*e)*d)*a^3*c-1/3*e*B*g^2*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e
)*a^3*c+5/24*d*e^2*B*g^2*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4+1/2*d*e^
2*A*g^2*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4+1/12*d*e*B*g^2*i/b/(1/(d*
x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^4+1/12*d*e^3*B*g^2*i*b/(1/(d*x+c)*a*d*e-1/(d*
x+c)*b*c*e)^3*a^4+1/12/d^3*e*B*g^2*i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*
c^4+2/3*d*e^3*A*g^2*i*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^4+2/3/d^3*e^3
*A*g^2*i*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^4+1/4/d^3*e^4*A*g^2*i*b^
6/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^4+5/24/d^3*e^2*B*g^2*i/(1/(d*x+c)*a
*d*e-1/(d*x+c)*b*c*e)^2*b^4*c^4+1/2/d^3*e^2*A*g^2*i/(1/(d*x+c)*a*d*e-1/(d*x
+c)*b*c*e)^2*b^4*c^4+1/12/d^3*e^3*B*g^2*i*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*
c*e)^3*c^4+1/4*d*e^4*A*g^2*i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^4-1/
3*e^3*B*g^2*i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c-5/6*e^2*B*g^2*i
/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*b*c-2*e^2*A*g^2*i/(1/(d*x+c)*a*d*e
-1/(d*x+c)*b*c*e)^2*a^3*b*c-8/3*e^3*A*g^2*i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*
b*c*e)^3*a^3*c-e^4*A*g^2*i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^3*c+1/
2*d*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*
b*c*e)^2*a^4-1/3/d^2*B*g^2*i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a*c^3
*b-1/2/d^3*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^4/(1/(d*x+c)*a*d*e
-1/(d*x+c)*b*c*e)^2*c^6/(d*x+c)^2+14*e^4*B*g^2*i*b^3*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^3*c^5/(d*x+c)^4+10*e^2*B*g^
2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3
*c^3/(d*x+c)^2*b+70/3*e^3*B*g^2*i*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d
*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c^4/(d*x+c)^3-2/3/d^3*e^3*B*g^2*i*b^5*ln
```

```
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^7/(d*x+
c)^3+4/d*e^3*B*g^2*i*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1
/(d*x+c)*b*c*e)^3*a^2*c^2-8/3/d^2*e^3*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*b^4*c^3-1/d^2*e^4*B*g^2*i*ln(b/d*e
+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a*b^5*c^3+3/d*e
^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b
*c*e)^2*a^2*c^2+2/3*d^4*e^3*B*g^2*i/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/
(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^7/(d*x+c)^3-1/4*d^5*e^4*B*g^2*i/b^2*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^8/(d*x+c)
^4+3/2/d*e^4*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*
x+c)*b*c*e)^4*a^2*c^2*b^4-14/d*e^3*B*g^2*i*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^5/(d*x+c)^3-7/d*e^4*B*g^2*i*b
^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^6/
(d*x+c)^4*a^2-15/2/d*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*
x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^4/(d*x+c)^2*a^2+14*d^2*e^4*B*g^2*i*ln(b/d*e
+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^5*c^3/(d*x+c)
^4*b-35/2*d*e^4*B*g^2*i*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*
e-1/(d*x+c)*b*c*e)^4*a^4*c^4/(d*x+c)^4+3*d^2*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^5*c/(d*x+c)^2+2/d^2*e
^4*B*g^2*i*b^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b
*c*e)^4*c^7/(d*x+c)^4*a+3/d^2*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b
^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^5/(d*x+c)^2*a+14/3/d^2*e^3*B*g^2*i
*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^
6/(d*x+c)^3*a-70/3*d*e^3*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)
*a*d*e-1/(d*x+c)*b*c*e)^3*a^4*c^3/(d*x+c)^3*b-14/3*d^3*e^3*B*g^2*i/b*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^6/(d*x+c)^3
*c+2*d^4*e^4*B*g^2*i/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(
d*x+c)*b*c*e)^4*a^7/(d*x+c)^4*c+14*d^2*e^3*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^5*c^2/(d*x+c)^3-7*d^3*e^4*B*g
^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^
6*c^2/(d*x+c)^4-2/d^2*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(1/(d
*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3*a-1/2*d^3*e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^6/(d*x+c)^2-15/2*d*
e^2*B*g^2*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*
e)^2*a^4*c^2/(d*x+c)^2-1/4/d^3*e^4*B*g^2*i*b^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^8/(d*x+c)^4+5/4/d*e^2*B*g^2*i/(1/
(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*b^2*c^2+1/2/d*e^3*B*g^2*i*b^3/(1/(d*x+
c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^2-8/3*e^3*B*g^2*i*b^2*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c+2/3/d^3*e^3*B*g^2*i*
b^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^4
+3/2/d*e^4*A*g^2*i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*c^2+3/d*e^2*
A*g^2*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c^2*b^2-5/6/d^2*e^2*B*g^2*i
/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*b^3*c^3*a-2*e^2*B*g^2*i*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*c-1/3/d^2*e*B*g
^2*i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*c^3-8/3/d^2*e^3*A*g^2*i*b^4/(1
/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*c^3+1/2/d*e*B*g^2*i*b/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)*a^2*c^2-1/3/d^2*e^3*B*g^2*i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)
*b*c*e)^3*a*c^3-1/d^2*e^4*A*g^2*i*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a
*c^3-2/d^2*e^2*A*g^2*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*b^3*c^3+4/d*e^
3*A*g^2*i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^2-e^4*B*g^2*i*ln(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^3*c*b^3+2/
3*d*e^3*B*g^2*i*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)^3*a^4+1/4*d*e^4*B*g^2*i*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*
x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^4+1/4/d^3*e^4*B*g^2*i*b^6*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^4+1/2/d^3*e^2*B*g^2*i*
ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^4
```

maxima [B] time = 1.23, size = 671, normalized size = 3.73

$$\frac{1}{4}Ab^2dg^2ix^4+\frac{1}{3}Ab^2cg^2ix^3+\frac{2}{3}Aabdg^2ix^3+Aabcg^2ix^2+\frac{1}{2}Aa^2dg^2ix^2+\left(x\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)+\frac{a\log(bx+a}{b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="maxima")
```

```
[Out] 1/4*A*b^2*d*g^2*i*x^4 + 1/3*A*b^2*c*g^2*i*x^3 + 2/3*A*a*b*d*g^2*i*x^3 + A*a
*b*c*g^2*i*x^2 + 1/2*A*a^2*d*g^2*i*x^2 + (x*log(b*e*x/(d*x + c) + a*e/(d*x
+ c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*B*a^2*c*g^2*i + (x^2*log(b*e*x
/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 -
 (b*c - a*d)*x/(b*d))*B*a*b*c*g^2*i + 1/6*(2*x^3*log(b*e*x/(d*x + c) + a*e/
(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d -
a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*b^2*c*g^2*i + 1/2*(x^2
*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x
+ c)/d^2 - (b*c - a*d)*x/(b*d))*B*a^2*d*g^2*i + 1/3*(2*x^3*log(b*e*x/(d*x +
 c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((
b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a*b*d*g^2*i
+ 1/24*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4
 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d -
 a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*b^2*d*g^2*i + A*a^2
*c*g^2*i*x
```

mupad [B] time = 5.11, size = 638, normalized size = 3.54

$$x^3\left(\frac{b\,g^2\,i\,(12\,A\,a\,d+8\,A\,b\,c+B\,a\,d-B\,b\,c)}{12}-\frac{A\,b\,g^2\,i\,(12\,a\,d+12\,b\,c)}{36}\right)-x^2\left(\frac{\left(\frac{b\,g^2\,i\,(12\,A\,a\,d+8\,A\,b\,c+B\,a\,d-B\,b\,c)}{4}-\frac{A}{}\right.}{24}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] x^3*((b*g^2*i*(12*A*a*d + 8*A*b*c + B*a*d - B*b*c))/12 - (A*b*g^2*i*(12*a*d
 + 12*b*c))/36) - x^2*((((b*g^2*i*(12*A*a*d + 8*A*b*c + B*a*d - B*b*c))/4 -
 (A*b*g^2*i*(12*a*d + 12*b*c))/12)*(12*a*d + 12*b*c))/(24*b*d) - (g^2*i*(9*
A*a^2*d^2 + 3*A*b^2*c^2 + 2*B*a^2*d^2 - B*b^2*c^2 + 18*A*a*b*c*d - B*a*b*c*
d))/(6*d) + (A*a*b*c*g^2*i)/2) + log((e*(a + b*x))/(c + d*x))*(B*a^2*c*g^2*
i*x + (B*a*g^2*i*x^2*(a*d + 2*b*c))/2 + (B*b*g^2*i*x^3*(2*a*d + b*c))/3 + (
B*b^2*d*g^2*i*x^4)/4) + x*(((12*a*d + 12*b*c)*((((b*g^2*i*(12*A*a*d + 8*A*b
*c + B*a*d - B*b*c))/4 - (A*b*g^2*i*(12*a*d + 12*b*c))/12)*(12*a*d + 12*b*c
))/(12*b*d) - (g^2*i*(9*A*a^2*d^2 + 3*A*b^2*c^2 + 2*B*a^2*d^2 - B*b^2*c^2 +
 18*A*a*b*c*d - B*a*b*c*d))/(3*d) + A*a*b*c*g^2*i))/(12*b*d) - (a*c*((b*g^2
*i*(12*A*a*d + 8*A*b*c + B*a*d - B*b*c))/4 - (A*b*g^2*i*(12*a*d + 12*b*c))/
12))/(b*d) + (a*g^2*i*(2*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2 - 2*B*b^2*c^2
+ 12*A*a*b*c*d + B*a*b*c*d))/(2*b*d)) - (log(c + d*x)*(B*b^2*c^4*g^2*i + 6*
B*a^2*c^2*d^2*g^2*i - 4*B*a*b*c^3*d*g^2*i))/(12*d^3) - (log(a + b*x)*(B*a^4
*d*g^2*i - 4*B*a^3*b*c*g^2*i))/(12*b^2) + (A*b^2*d*g^2*i*x^4)/4
```

sympy [B] time = 5.11, size = 850, normalized size = 4.72

$$\frac{Ab^2dg^2ix^4}{4}-\frac{Ba^3g^2i(ad-4bc)\log\left(x+\frac{Ba^4cd^3g^2i+\frac{Ba^4d^3g^2i(ad-4bc)}{b}-10Ba^3bc^2d^2g^2i-Ba^3cd^2g^2i(ad-4bc)+4Ba^2b^2c^3dg^2i-Bab^3c^4g^2i}{Ba^4d^4g^2i-4Ba^3bcd^3g^2i-6Ba^2b^2c^2d^2g^2i+4Bab^3c^3dg^2i-Bb^4c^4g^2i}\right)}{12b^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*b**2*d*g**2*i*x**4/4 - B*a**3*g**2*i*(a*d - 4*b*c)*log(x + (B*a**4*c*d**3
*g**2*i + B*a**4*d**3*g**2*i*(a*d - 4*b*c)/b - 10*B*a**3*b*c**2*d**2*g**2*i
 - B*a**3*c*d**2*g**2*i*(a*d - 4*b*c) + 4*B*a**2*b**2*c**3*d*g**2*i - B*a*b
**3*c**4*g**2*i)/(B*a**4*d**4*g**2*i - 4*B*a**3*b*c*d**3*g**2*i - 6*B*a**2*
b**2*c**2*d**2*g**2*i + 4*B*a*b**3*c**3*d*g**2*i - B*b**4*c**4*g**2*i))/(12
*b**2) - B*c**2*g**2*i*(6*a**2*d**2 - 4*a*b*c*d + b**2*c**2)*log(x + (B*a**
4*c*d**3*g**2*i - 10*B*a**3*b*c**2*d**2*g**2*i + 4*B*a**2*b**2*c**3*d*g**2*
i - B*a*b**3*c**4*g**2*i + B*a*b*c**2*g**2*i*(6*a**2*d**2 - 4*a*b*c*d + b**
2*c**2) - B*b**2*c**3*g**2*i*(6*a**2*d**2 - 4*a*b*c*d + b**2*c**2)/d)/(B*a*
*4*d**4*g**2*i - 4*B*a**3*b*c*d**3*g**2*i - 6*B*a**2*b**2*c**2*d**2*g**2*i
+ 4*B*a*b**3*c**3*d*g**2*i - B*b**4*c**4*g**2*i))/(12*d**3) + x**3*(2*A*a*b
*d*g**2*i/3 + A*b**2*c*g**2*i/3 + B*a*b*d*g**2*i/12 - B*b**2*c*g**2*i/12) +
 x**2*(A*a**2*d*g**2*i/2 + A*a*b*c*g**2*i + 5*B*a**2*d*g**2*i/24 - B*a*b*c*
g**2*i/6 - B*b**2*c**2*g**2*i/(24*d)) + x*(A*a**2*c*g**2*i + B*a**3*d*g**2*
i/(12*b) + B*a**2*c*g**2*i/6 - B*a*b*c**2*g**2*i/(3*d) + B*b**2*c**3*g**2*i
/(12*d**2)) + (B*a**2*c*g**2*i*x + B*a**2*d*g**2*i*x**2/2 + B*a*b*c*g**2*i*
x**2 + 2*B*a*b*d*g**2*i*x**3/3 + B*b**2*c*g**2*i*x**3/3 + B*b**2*d*g**2*i*x
**4/4)*log(e*(a + b*x)/(c + d*x))
```

3.3 $\int (ag+bgx)(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\,dx$

Optimal. Leaf size=140

$$\frac{gi(a+bx)^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A-B\right)}{6b^2}+\frac{gi(a+bx)^2(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b}+\frac{Bgi(bc-ad)^3\log(c}{6b^2d^2}$$

```
[Out] -1/6*B*(-a*d+b*c)^2*g*i*x/b/d+1/3*g*i*(b*x+a)^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(
d*x+c)))/b+1/6*(-a*d+b*c)*g*i*(b*x+a)^2*(A-B+B*ln(e*(b*x+a)/(d*x+c)))/b^2+1
/6*B*(-a*d+b*c)^3*g*i*ln(d*x+c)/b^2/d^2
```

Rubi [B] time = 0.34, antiderivative size = 294, normalized size of antiderivative = 2.10, number of steps used = 13, number of rules used = 6, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {2528, 2486, 31, 2525, 12, 72}

$$-\frac{1}{3}bBdgix\left(\frac{a^2}{b^2}-\frac{c^2}{d^2}\right)-\frac{a^2Bgi(ad+bc)\log(a+bx)}{2b^2}+\frac{a^3Bdgi\log(a+bx)}{3b^2}+\frac{1}{3}bdgix^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+\frac{1}{2}g$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] a*A*c*g*i*x - (b*B*(a^2/b^2 - c^2/d^2)*d*g*i*x)/3 - (B*(b*c - a*d)*(b*c + a
*d)*g*i*x)/(2*b*d) - (B*(b*c - a*d)*g*i*x^2)/6 + (a^3*B*d*g*i*Log[a + b*x])
/(3*b^2) - (a^2*B*(b*c + a*d)*g*i*Log[a + b*x])/(2*b^2) + (a*B*c*g*i*(a + b
*x)*Log[(e*(a + b*x))/(c + d*x)])/b + ((b*c + a*d)*g*i*x^2*(A + B*Log[(e*(a
 + b*x))/(c + d*x)]))/2 + (b*d*g*i*x^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])
)/3 - (b*B*c^3*g*i*Log[c + d*x])/(3*d^2) - (a*B*c*(b*c - a*d)*g*i*Log[c + d
*x])/(b*d) + (B*c^2*(b*c + a*d)*g*i*Log[c + d*x])/(2*d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
```

```
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (3c+3dx)(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx = \int \left(3acg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)+3(bc+ad)gx\left(A+B\,\mathrm{l}\right.\right.$$
$$= (3acg)\int\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx+(3bdg)\int x^2\left(A+\right.$$
$$= 3aAcgx+\frac{3}{2}(bc+ad)gx^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)+bdgx^3$$
$$= 3aAcgx+\frac{3aBcg(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b}+\frac{3}{2}(bc+ad)gx^2\left(A\right.$$
$$= 3aAcgx+\frac{3aBcg(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b}+\frac{3}{2}(bc+ad)gx^2\left(A\right.$$
$$= 3aAcgx-\frac{B(bc-ad)(bc+ad)gx}{2bd}-\frac{1}{2}B(bc-ad)gx^2+\frac{a^3B}{}$$

Mathematica [A] time = 0.24, size = 181, normalized size = 1.29

$$\frac{gi\left(b\left(dx\left(a^2Bd^2+abd(6Ac+3Adx+Bdx)+Ab^2dx(3c+2dx)+b^2(-B)c(c+dx)\right)+Bc\left(6a^2d^2-3abcd+b^2c^2\right)1\right.\right.}{6b^2d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]),
x]
```

```
[Out] (g*i*(-(a^2*B*d^2*(3*b*c + a*d)*Log[a + b*x]) + b*(d*x*(a^2*B*d^2 - b^2*B*c
*(c + d*x) + A*b^2*d*x*(3*c + 2*d*x) + a*b*d*(6*A*c + 3*A*d*x + B*d*x)) + B
*d^2*(6*a^2*c + 3*a*b*x*(2*c + d*x) + b^2*x^2*(3*c + 2*d*x))*Log[(e*(a + b*
x))/(c + d*x)] + B*c*(b^2*c^2 - 3*a*b*c*d + 6*a^2*d^2)*Log[c + d*x])))/(6*b
^2*d^2)
```

fricas [A] time = 0.83, size = 226, normalized size = 1.61

$$\frac{2\,Ab^3d^3gix^3+\left((3\,A-B)b^3cd^2+(3\,A+B)ab^2d^3\right)gix^2-\left(Bb^3c^2d-6\,Aab^2cd^2-Ba^2bd^3\right)gix+\left(3\,Ba^2bcd^2-Ba^3d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm
="fricas")
```

```
[Out] 1/6*(2*A*b^3*d^3*g*i*x^3 + ((3*A - B)*b^3*c*d^2 + (3*A + B)*a*b^2*d^3)*g*i*
x^2 - (B*b^3*c^2*d - 6*A*a*b^2*c*d^2 - B*a^2*b*d^3)*g*i*x + (3*B*a^2*b*c*d^
2 - B*a^3*d^3)*g*i*log(b*x + a) + (B*b^3*c^3 - 3*B*a*b^2*c^2*d)*g*i*log(d*x
 + c) + (2*B*b^3*d^3*g*i*x^3 + 6*B*a*b^2*c*d^2*g*i*x + 3*(B*b^3*c*d^2 + B*a
*b^2*d^3)*g*i*x^2)*log((b*e*x + a*e)/(d*x + c)))/(b^2*d^2)
```

giac [B] time = 0.85, size = 2404, normalized size = 17.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm
="giac")
```

```
[Out] -1/6*(B*b^7*c^4*g*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 4*B*a*b^6*c
^3*d*g*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 6*B*a^2*b^5*c^2*d^2*g*
i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 4*B*a^3*b^4*c*d^3*g*i*e^4*log
(-b*e + (b*x*e + a*e)*d/(d*x + c)) + B*a^4*b^3*d^4*g*i*e^4*log(-b*e + (b*x*
e + a*e)*d/(d*x + c)) - 3*(b*x*e + a*e)*B*b^6*c^4*d*g*i*e^3*log(-b*e + (b*x
*e + a*e)*d/(d*x + c))/(d*x + c) + 12*(b*x*e + a*e)*B*a*b^5*c^3*d^2*g*i*e^3
*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 18*(b*x*e + a*e)*B*a^2*b
^4*c^2*d^3*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 12*(b*
x*e + a*e)*B*a^3*b^3*c*d^4*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d
*x + c) - 3*(b*x*e + a*e)*B*a^4*b^2*d^5*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/
(d*x + c))/(d*x + c) + 3*(b*x*e + a*e)^2*B*b^5*c^4*d^2*g*i*e^2*log(-b*e + (
b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 12*(b*x*e + a*e)^2*B*a*b^4*c^3*d^3*
g*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 18*(b*x*e + a*e
)^2*B*a^2*b^3*c^2*d^4*g*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x +
c)^2 - 12*(b*x*e + a*e)^2*B*a^3*b^2*c*d^5*g*i*e^2*log(-b*e + (b*x*e + a*e)*
d/(d*x + c))/(d*x + c)^2 + 3*(b*x*e + a*e)^2*B*a^4*b*d^6*g*i*e^2*log(-b*e +
 (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - (b*x*e + a*e)^3*B*b^4*c^4*d^3*g*i
*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 4*(b*x*e + a*e)^3*B*
a*b^3*c^3*d^4*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 6*(
b*x*e + a*e)^3*B*a^2*b^2*c^2*d^5*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c)
)/(d*x + c)^3 + 4*(b*x*e + a*e)^3*B*a^3*b*c*d^6*g*i*e*log(-b*e + (b*x*e + a
*e)*d/(d*x + c))/(d*x + c)^3 - (b*x*e + a*e)^3*B*a^4*d^7*g*i*e*log(-b*e + (
b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 3*(b*x*e + a*e)^2*B*b^5*c^4*d^2*g*i
*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 12*(b*x*e + a*e)^2*B*a*b^4*
c^3*d^3*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 18*(b*x*e + a*e)
^2*B*a^2*b^3*c^2*d^4*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 12*
(b*x*e + a*e)^2*B*a^3*b^2*c*d^5*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x +
 c)^2 - 3*(b*x*e + a*e)^2*B*a^4*b*d^6*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/
(d*x + c)^2 + (b*x*e + a*e)^3*B*b^4*c^4*d^3*g*i*e*log((b*x*e + a*e)/(d*x +
c))/(d*x + c)^3 - 4*(b*x*e + a*e)^3*B*a*b^3*c^3*d^4*g*i*e*log((b*x*e + a*e)
/(d*x + c))/(d*x + c)^3 + 6*(b*x*e + a*e)^3*B*a^2*b^2*c^2*d^5*g*i*e*log((b*
x*e + a*e)/(d*x + c))/(d*x + c)^3 - 4*(b*x*e + a*e)^3*B*a^3*b*c*d^6*g*i*e*l
og((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + (b*x*e + a*e)^3*B*a^4*d^7*g*i*e*l
og((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + A*b^7*c^4*g*i*e^4 - 4*A*a*b^6*c^3
*d*g*i*e^4 + 6*A*a^2*b^5*c^2*d^2*g*i*e^4 - 4*A*a^3*b^4*c*d^3*g*i*e^4 + A*a^
4*b^3*d^4*g*i*e^4 - 3*(b*x*e + a*e)*A*b^6*c^4*d*g*i*e^3/(d*x + c) + (b*x*e
+ a*e)*B*b^6*c^4*d*g*i*e^3/(d*x + c) + 12*(b*x*e + a*e)*A*a*b^5*c^3*d^2*g*i
*e^3/(d*x + c) - 4*(b*x*e + a*e)*B*a*b^5*c^3*d^2*g*i*e^3/(d*x + c) - 18*(b*
x*e + a*e)*A*a^2*b^4*c^2*d^3*g*i*e^3/(d*x + c) + 6*(b*x*e + a*e)*B*a^2*b^4*
c^2*d^3*g*i*e^3/(d*x + c) + 12*(b*x*e + a*e)*A*a^3*b^3*c*d^4*g*i*e^3/(d*x +
 c) - 4*(b*x*e + a*e)*B*a^3*b^3*c*d^4*g*i*e^3/(d*x + c) - 3*(b*x*e + a*e)*A
*a^4*b^2*d^5*g*i*e^3/(d*x + c) + (b*x*e + a*e)*B*a^4*b^2*d^5*g*i*e^3/(d*x +
 c) - (b*x*e + a*e)^2*B*b^5*c^4*d^2*g*i*e^2/(d*x + c)^2 + 4*(b*x*e + a*e)^2
*B*a*b^4*c^3*d^3*g*i*e^2/(d*x + c)^2 - 6*(b*x*e + a*e)^2*B*a^2*b^3*c^2*d^4*
g*i*e^2/(d*x + c)^2 + 4*(b*x*e + a*e)^2*B*a^3*b^2*c*d^5*g*i*e^2/(d*x + c)^2
 - (b*x*e + a*e)^2*B*a^4*b*d^6*g*i*e^2/(d*x + c)^2)*(b*c/((b*c*e - a*d*e)*(
```

```
b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^5*d^2*e^3 - 3*(b*x*e +
a*e)*b^4*d^3*e^2/(d*x + c) + 3*(b*x*e + a*e)^2*b^3*d^4*e/(d*x + c)^2 - (b*x
*e + a*e)^3*b^2*d^5/(d*x + c)^3)
```

maple [B] time = 0.14, size = 2407, normalized size = 17.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

```
[Out] -1/6/d^2*B*g*i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^3*b-1/2*B*g*i/b*l
n(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*c+1/6*d*e*B*g*i/b/(1/(d*x+c)*a*
d*e-1/(d*x+c)*b*c*e)*a^3+1/3*d*e^3*A*g*i*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e
)^3*a^3+1/2*d*e^2*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)^2*a^3-1/3/d^2*e^3*A*g*i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e
)^3*c^3-1/2/d^2*e^2*A*g*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*b^3*c^3-1/6/d
^2*e*B*g*i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^3-1/6/d^2*e^2*B*g*i/(1/(
d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*b^3*c^3-3/2*e^2*A*g*i/(1/(d*x+c)*a*d*e-1/(d
*x+c)*b*c*e)^2*a^2*b*c-1/2*e^2*B*g*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^
2*b*c-e^3*A*g*i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c+1/2*d*e^2*A*g
*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3+1/6*d*e^2*B*g*i/(1/(d*x+c)*a*d*e
-1/(d*x+c)*b*c*e)^2*a^3+1/6*d*B*g*i/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*d)*a^3+1/2/d*B*g*i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2*a-1/2*e*
B*g*i/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2*c-2/d*e^3*B*g*i*ln(b/d*e+(a*d-b
*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^5/(d*x+c)^3*b^3*a+5/
2*d^2*e^2*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)^2*a^4*c/(d*x+c)^2-5/2/d*e^2*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c^4/(d*x+c)^2-2*d^3*e^3*B*g*i/b*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^5*c/(d
*x+c)^3-20/3*d*e^3*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1
/(d*x+c)*b*c*e)^3*a^3*c^3/(d*x+c)^3*b-1/2*d^3*e^2*B*g*i*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^5/(d*x+c)^2+1/3*d^4*
e^3*B*g*i/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*
c*e)^3*a^6/(d*x+c)^3+1/d*e^3*B*g*i*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(
d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*c^2+3/2/d*e^2*B*g*i*ln(b/d*e+(a*d-b*c)/(d
*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c^2-5*d*e^2*B*g*i*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*c^2/(d*
x+c)^2+5*d^2*e^3*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(
d*x+c)*b*c*e)^3*a^4*c^2/(d*x+c)^3+1/3/d^2*e^3*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^6/(d*x+c)^3*b^4+1/2/d^2*e^2*
B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c
^5/(d*x+c)^2*b^3+5*e^3*B*g*i*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)
*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^4/(d*x+c)^3+5*e^2*B*g*i*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c^3/(d*x+c)^2*b-3/2*e^
2*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)
^2*a^2*c-1/2/d^2*e^2*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e
-1/(d*x+c)*b*c*e)^2*c^3*b^3-1/3/d^2*e^3*B*g*i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^4*c^3+1/3*d*e^3*B*g*i*b*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3+1/d*e^3*A*g*i
*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^2*a+3/2/d*e^2*A*g*i/(1/(d*x+c)*a
*d*e-1/(d*x+c)*b*c*e)^2*b^2*c^2*a+1/2/d*e^2*B*g*i/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)^2*b^2*c^2*a-e^3*B*g*i*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+
c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c+1/2/d*e*B*g*i*b/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)*c^2*a
```

maxima [B] time = 1.20, size = 361, normalized size = 2.58

$$\frac{1}{3}Abdgix^3+\frac{1}{2}Abcgix^2+\frac{1}{2}Aadgix^2+\left(x\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)+\frac{a\log(bx+a)}{b}-\frac{c\log(dx+c)}{d}\right)Bacgi+\frac{1}{2}\left(x^2\log\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm
="maxima")
```

```
[Out] 1/3*A*b*d*g*i*x^3 + 1/2*A*b*c*g*i*x^2 + 1/2*A*a*d*g*i*x^2 + (x*log(b*e*x/(d
*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*B*a*c*g*i +
 1/2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2
*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*b*c*g*i + 1/2*(x^2*log(b*e*x/(d*
x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*
c - a*d)*x/(b*d))*B*a*d*g*i + 1/6*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c
)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)
*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*b*d*g*i + A*a*c*g*i*x
```

mupad [B] time = 4.71, size = 282, normalized size = 2.01

$$x^2\left(\frac{g\,i\,(6\,A\,a\,d+6\,A\,b\,c+B\,a\,d-B\,b\,c)}{6}-\frac{A\,g\,i\,(6\,a\,d+6\,b\,c)}{12}\right)-x\left(\frac{\left(\frac{g\,i\,(6\,A\,a\,d+6\,A\,b\,c+B\,a\,d-B\,b\,c)}{3}-\frac{A\,g\,i\,(6\,a\,d+6\,b\,c)}{6}\right)}{6\,b\,d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] x^2*((g*i*(6*A*a*d + 6*A*b*c + B*a*d - B*b*c))/6 - (A*g*i*(6*a*d + 6*b*c))/
12) - x*((((g*i*(6*A*a*d + 6*A*b*c + B*a*d - B*b*c))/3 - (A*g*i*(6*a*d + 6*
b*c))/6)*(6*a*d + 6*b*c))/(6*b*d) + A*a*c*g*i - (g*i*(2*A*a^2*d^2 + 2*A*b^2
*c^2 + B*a^2*d^2 - B*b^2*c^2 + 8*A*a*b*c*d))/(2*b*d)) + log((e*(a + b*x))/(
c + d*x))*((B*g*i*x^2*(a*d + b*c))/2 + (B*b*d*g*i*x^3)/3 + B*a*c*g*i*x) - (
log(a + b*x)*(B*a^3*d*g*i - 3*B*a^2*b*c*g*i))/(6*b^2) + (log(c + d*x)*(B*b*
c^3*g*i - 3*B*a*c^2*d*g*i))/(6*d^2) + (A*b*d*g*i*x^3)/3
```

sympy [B] time = 3.15, size = 498, normalized size = 3.56

$$\frac{Abdgix^3}{3}-\frac{Ba^2gi\,(ad-3bc)\log\left(x+\frac{Ba^3cd^2gi+\frac{Ba^3d^2gi(ad-3bc)}{b}-6Ba^2bc^2dgi-Ba^2cdgi(ad-3bc)+Bab^2c^3gi}{Ba^3d^3gi-3Ba^2bcd^2gi-3Bab^2c^2dgi+Bb^3c^3gi}\right)}{6b^2}-\frac{Bc^2gi\,(3ad-bc)\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*b*d*g*i*x**3/3 - B*a**2*g*i*(a*d - 3*b*c)*log(x + (B*a**3*c*d**2*g*i + B*
a**3*d**2*g*i*(a*d - 3*b*c)/b - 6*B*a**2*b*c**2*d*g*i - B*a**2*c*d*g*i*(a*d
 - 3*b*c) + B*a*b**2*c**3*g*i)/(B*a**3*d**3*g*i - 3*B*a**2*b*c*d**2*g*i - 3
*B*a*b**2*c**2*d*g*i + B*b**3*c**3*g*i))/(6*b**2) - B*c**2*g*i*(3*a*d - b*c
)*log(x + (B*a**3*c*d**2*g*i - 6*B*a**2*b*c**2*d*g*i + B*a*b**2*c**3*g*i +
B*a*b*c**2*g*i*(3*a*d - b*c) - B*b**2*c**3*g*i*(3*a*d - b*c)/d)/(B*a**3*d**
3*g*i - 3*B*a**2*b*c*d**2*g*i - 3*B*a*b**2*c**2*d*g*i + B*b**3*c**3*g*i))/(
6*d**2) + x**2*(A*a*d*g*i/2 + A*b*c*g*i/2 + B*a*d*g*i/6 - B*b*c*g*i/6) + x*
(A*a*c*g*i + B*a**2*d*g*i/(6*b) - B*b*c**2*g*i/(6*d)) + (B*a*c*g*i*x + B*a*
d*g*i*x**2/2 + B*b*c*g*i*x**2/2 + B*b*d*g*i*x**3/3)*log(e*(a + b*x)/(c + d*
x))
```

3.4 $\int (ci + dix)\left(A + B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx$

Optimal. Leaf size=81

$$\frac{i(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2d}-\frac{Bi(bc-ad)^2\log(a+bx)}{2b^2d}-\frac{Bix(bc-ad)}{2b}$$

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

Rubi [A] time = 0.06, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.107$, Rules used = {2525, 12, 43}

$$\frac{i(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2d}-\frac{Bi(bc-ad)^2\log(a+bx)}{2b^2d}-\frac{Bix(bc-ad)}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

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

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\int (4c+4dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx = \frac{2(c+dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d} - \frac{B\int \frac{16(bc-ad)(c+dx)}{a+bx}dx}{8d}$$
$$= \frac{2(c+dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d} - \frac{(2B(bc-ad))\int \frac{c+dx}{a+bx}dx}{d}$$
$$= \frac{2(c+dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d} - \frac{(2B(bc-ad))\int \left(\frac{d}{b}+\frac{bc-ad}{b(a+bx)}\right) d}{d}$$
$$= -\frac{2B(bc-ad)x}{b} - \frac{2B(bc-ad)^2\log(a+bx)}{b^2d} + \frac{2(c+dx)^2\left(A+B\log\right.}{d}$$

Mathematica [A] time = 0.03, size = 70, normalized size = 0.86

$$\frac{i\left((c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-\frac{B(bc-ad)((bc-ad)\log(a+bx)+bdx)}{b^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

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

fricas [A] time = 0.91, size = 127, normalized size = 1.57

$$\frac{Ab^2d^2ix^2 - Bb^2c^2i\log(dx+c) + \left((2A-B)b^2cd + Babd^2\right)ix + \left(2Babcd - Ba^2d^2\right)i\log(bx+a) + \left(Bb^2d^2ix^2 + \right.}{2b^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="fricas")
```

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

giac [B] time = 0.67, size = 1395, normalized size = 17.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")
```

```
[Out] 1/2*(B*b^5*c^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 3*B*a*b^4*c^2*
d*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 3*B*a^2*b^3*c*d^2*i*e^3*log
(-b*e + (b*x*e + a*e)*d/(d*x + c)) - B*a^3*b^2*d^3*i*e^3*log(-b*e + (b*x*e
+ a*e)*d/(d*x + c)) - 2*(b*x*e + a*e)*B*b^4*c^3*d*i*e^2*log(-b*e + (b*x*e +
 a*e)*d/(d*x + c))/(d*x + c) + 6*(b*x*e + a*e)*B*a*b^3*c^2*d^2*i*e^2*log(-b
*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 6*(b*x*e + a*e)*B*a^2*b^2*c*d^3
*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 2*(b*x*e + a*e)*B*
a^3*b*d^4*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + (b*x*e +
a*e)^2*B*b^3*c^3*d^2*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2
- 3*(b*x*e + a*e)^2*B*a*b^2*c^2*d^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c
))/(d*x + c)^2 + 3*(b*x*e + a*e)^2*B*a^2*b*c*d^4*i*e*log(-b*e + (b*x*e + a*
e)*d/(d*x + c))/(d*x + c)^2 - (b*x*e + a*e)^2*B*a^3*d^5*i*e*log(-b*e + (b*x
```

```
*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 2*(b*x*e + a*e)*B*b^4*c^3*d*i*e^2*log(
(b*x*e + a*e)/(d*x + c))/(d*x + c) - 6*(b*x*e + a*e)*B*a*b^3*c^2*d^2*i*e^2*
log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 6*(b*x*e + a*e)*B*a^2*b^2*c*d^3*i*
e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 2*(b*x*e + a*e)*B*a^3*b*d^4*i*
e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - (b*x*e + a*e)^2*B*b^3*c^3*d^2*
i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 3*(b*x*e + a*e)^2*B*a*b^2*c^
2*d^3*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 3*(b*x*e + a*e)^2*B*a^
2*b*c*d^4*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + (b*x*e + a*e)^2*B*
a^3*d^5*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + A*b^5*c^3*i*e^3 - B*
b^5*c^3*i*e^3 - 3*A*a*b^4*c^2*d*i*e^3 + 3*B*a*b^4*c^2*d*i*e^3 + 3*A*a^2*b^3
*c*d^2*i*e^3 - 3*B*a^2*b^3*c*d^2*i*e^3 - A*a^3*b^2*d^3*i*e^3 + B*a^3*b^2*d^
3*i*e^3 + (b*x*e + a*e)*B*b^4*c^3*d*i*e^2/(d*x + c) - 3*(b*x*e + a*e)*B*a*b
^3*c^2*d^2*i*e^2/(d*x + c) + 3*(b*x*e + a*e)*B*a^2*b^2*c*d^3*i*e^2/(d*x + c
) - (b*x*e + a*e)*B*a^3*b*d^4*i*e^2/(d*x + c))*(b*c/((b*c*e - a*d*e)*(b*c -
 a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^4*d*e^2 - 2*(b*x*e + a*e)*b^
3*d^2*e/(d*x + c) + (b*x*e + a*e)^2*b^2*d^3/(d*x + c)^2)
```

maple [B] time = 0.13, size = 940, normalized size = 11.60

$$-\frac{B a^4 d^3 e^2 i \ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)^2 (dx+c)^2 b^2}+\frac{2B a^3 c d^2 e^2 i \ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)^2 (dx+c)^2 b}-\frac{3B a^2 c^2 d e^2 i \ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)^2 (dx+c)^2}+\frac{2Bab c^3 e^2 i \ln\left(\frac{be}{d}+\right.}{\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)^2 (dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

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

maxima [A] time = 1.10, size = 144, normalized size = 1.78

$$\frac{1}{2}Adix^2+\left(x\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)+\frac{a\log(bx+a)}{b}-\frac{c\log(dx+c)}{d}\right)Bci+\frac{1}{2}\left(x^2\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)-\frac{a^2\log(}{b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")
```

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

mupad [B] time = 4.64, size = 126, normalized size = 1.56

$$x\left(\frac{i\,(2\,A\,a\,d+4\,A\,b\,c+B\,a\,d-B\,b\,c)}{2\,b}-\frac{A\,i\,(2\,a\,d+2\,b\,c)}{2\,b}\right)+\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\left(\frac{B\,d\,i\,x^2}{2}+B\,c\,i\,x\right)-\frac{\ln(a+b\,x)\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] x*((i*(2*A*a*d + 4*A*b*c + B*a*d - B*b*c))/(2*b) - (A*i*(2*a*d + 2*b*c))/(2
*b)) + log((e*(a + b*x))/(c + d*x))*((B*d*i*x^2)/2 + B*c*i*x) - (log(a + b*
x)*(B*a^2*d*i - 2*B*a*b*c*i))/(2*b^2) + (A*d*i*x^2)/2 - (B*c^2*i*log(c + d*
x))/(2*d)
```

sympy [B] time = 1.99, size = 253, normalized size = 3.12

$$\frac{Adix^2}{2}-\frac{Bai\,(ad-2bc)\log\left(x+\frac{Ba^2cdi+\frac{Ba^2di(ad-2bc)}{b}-3Babc^2i-Baci(ad-2bc)}{Ba^2d^2i-2Babcdi-Bb^2c^2i}\right)}{2b^2}-\frac{Bc^2i\log\left(x+\frac{Ba^2cdi-2Babc^2i-\frac{Bb^2c^3i}{d}}{Ba^2d^2i-2Babcdi-Bb^2c^2i}\right)}{2d}+x\,(Ac$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*d*i*x**2/2 - B*a*i*(a*d - 2*b*c)*log(x + (B*a**2*c*d*i + B*a**2*d*i*(a*d
- 2*b*c)/b - 3*B*a*b*c**2*i - B*a*c*i*(a*d - 2*b*c))/(B*a**2*d**2*i - 2*B*a
*b*c*d*i - B*b**2*c**2*i))/(2*b**2) - B*c**2*i*log(x + (B*a**2*c*d*i - 2*B*
a*b*c**2*i - B*b**2*c**3*i/d)/(B*a**2*d**2*i - 2*B*a*b*c*d*i - B*b**2*c**2*
i))/(2*d) + x*(A*c*i + B*a*d*i/(2*b) - B*c*i/2) + (B*c*i*x + B*d*i*x**2/2)*
log(e*(a + b*x)/(c + d*x))
```

3.5 $\int \frac{(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{ag+bgx}\,dx$

Optimal. Leaf size=133

$$-\frac{i(bc-ad)\log\left(-\frac{bc-ad}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A-B\right)}{b^2g}+\frac{i(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{bg}+\frac{Bi(bc-ad)\text{Li}_2\left(\frac{bc-ad}{d(a+bx)}+1\right)}{b^2g}$$

```
[Out] i*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b/g-(-a*d+b*c)*i*ln((a*d-b*c)/d/(b*x+
a))*(A-B+B*ln(e*(b*x+a)/(d*x+c)))/b^2/g+B*(-a*d+b*c)*i*polylog(2,1+(-a*d+b*
c)/d/(b*x+a))/b^2/g
```

Rubi [A] time = 0.35, antiderivative size = 213, normalized size of antiderivative = 1.60, number of steps used = 14, number of rules used = 11, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.290, Rules used = {2528, 2486, 31, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bi(bc-ad)\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2g}+\frac{i(bc-ad)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g}+\frac{Bdi(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g}-\frac{Bi(bc\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x),x]
```

```
[Out] (A*d*i*x)/(b*g) - (B*(b*c - a*d)*i*Log[a + b*x]^2)/(2*b^2*g) + (B*d*i*(a +
b*x)*Log[(e*(a + b*x))/(c + d*x)])/(b^2*g) + ((b*c - a*d)*i*Log[a + b*x]*(A
 + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^2*g) - (B*(b*c - a*d)*i*Log[c + d*x]
)/(b^2*g) + (B*(b*c - a*d)*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(
b^2*g) + (B*(b*c - a*d)*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(5c+5dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{ag+bgx}\,dx = \int \left(\frac{5d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{bg}+\frac{5(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{bg(a+bx)}\right)dx$$

$$= \frac{(5d)\int\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{bg}+\frac{(5(bc-ad))\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}dx}{bg}$$

$$= \frac{5Adx}{bg}+\frac{5(bc-ad)\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g}+\frac{(5Bd)\int\log\left(\frac{e(a}{c}\right.}{bg}$$

$$= \frac{5Adx}{bg}+\frac{5Bd(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g}+\frac{5(bc-ad)\log(a+bx)\left(A+B\log\right.}{b^2g}$$

$$= \frac{5Adx}{bg}+\frac{5Bd(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g}+\frac{5(bc-ad)\log(a+bx)\left(A+B\log\right.}{b^2g}$$

$$= \frac{5Adx}{bg}+\frac{5Bd(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g}+\frac{5(bc-ad)\log(a+bx)\left(A+B\log\right.}{b^2g}$$

$$= \frac{5Adx}{bg}+\frac{5Bd(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g}+\frac{5(bc-ad)\log(a+bx)\left(A+B\log\right.}{b^2g}$$

$$= \frac{5Adx}{bg}-\frac{5B(bc-ad)\log^2(a+bx)}{2b^2g}+\frac{5Bd(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g}+\frac{5(bc-}{}$$

$$= \frac{5Adx}{bg}-\frac{5B(bc-ad)\log^2(a+bx)}{2b^2g}+\frac{5Bd(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g}+\frac{5(bc-}{}$$

Mathematica [A] time = 0.12, size = 164, normalized size = 1.23

$$\frac{i\left(2(bc-ad)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+B\log\left(\frac{b(c+dx)}{bc-ad}\right)+A\right)+2\left(Bd(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)+\log(c+dx)(aBd-\right.\right.}{2b^2g}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x
),x]
```

```
[Out] (i*((-(b*B*c) + a*B*d)*Log[a + b*x]^2 + 2*(A*b*d*x + B*d*(a + b*x)*Log[(e*(
a + b*x))/(c + d*x)] + (-(b*B*c) + a*B*d)*Log[c + d*x]) + 2*(b*c - a*d)*Log
[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)] + B*Log[(b*(c + d*x))/(b*c -
a*d)]) + 2*B*(b*c - a*d)*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))/(2*b^2*
g)
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Adix+Aci+(Bdix+Bci)\log\left(\frac{bex+ae}{dx+c}\right)}{bgx+ag},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorithm
="fricas")
```

```
[Out] integral((A*d*i*x + A*c*i + (B*d*i*x + B*c*i)*log((b*e*x + a*e)/(d*x + c)))
/(b*g*x + a*g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)\left(B\log\left(\frac{(bx+a)e}{dx+c}\right)+A\right)}{bgx+ag}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorithm
="giac")
```

```
[Out] integrate((d*i*x + c*i)*(B*log((b*x + a)*e/(d*x + c)) + A)/(b*g*x + a*g), x
)
```

maple [B] time = 0.12, size = 1044, normalized size = 7.85

$$\frac{Ba^2d^2ei\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)(dx+c)\,b^2g}-\frac{2Bacdei\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)(dx+c)\,bg}+\frac{Bc^2ei\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)(dx+c)\,g}+\frac{Badei\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)bg}-\frac{Bcei\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g),x)
```

```
[Out] d*e*i/g*A/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a-e*i/g*A/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)*c+d*i/g*A/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a-i/g
*A/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-d*i/g*A/b^2*ln(b/d*e+(a*d-b
*c)/(d*x+c)/d*e)*a+i/g*A/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d*i/g*B/b^2*ln
(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+i/g*B/b*ln(-b*e+(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*d)*c+d*e*i/g*B/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d
*e-1/(d*x+c)*b*c*e)*a-e*i/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*
d*e-1/(d*x+c)*b*c*e)*c+d^2*e*i/g*B/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(
d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a^2-2*d*e*i/g*B/b*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a*c+e*i/g*B*ln(b/d*e
+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*c^2+d*i/g
*B/b^2*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a-i/g*B/b*dilog(-
(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c+d*i/g*B/b^2*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a-i/g*B/b*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/
e)*c-1/2*d*i/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^2*a+1/2*i/g*B*ln(b/d*e
+(a*d-b*c)/(d*x+c)/d*e)^2/b*c
```

maxima [A] time = 1.84, size = 241, normalized size = 1.81

$$Adi\left(\frac{x}{bg}-\frac{a\log(bx+a)}{b^2g}\right)+\frac{Aci\log\left(bgx+ag\right)}{bg}-\frac{Bci\log(dx+c)}{bg}+\frac{(bci-adi)\left(\log(bx+a)\log\left(\frac{bdx+ad}{bc-ad}+1\right)+\mathrm{L}\right.}{b^2g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorithm
="maxima")
```

```
[Out] A*d*i*(x/(b*g) - a*log(b*x + a)/(b^2*g)) + A*c*i*log(b*g*x + a*g)/(b*g) - B
*c*i*log(d*x + c)/(b*g) + (b*c*i - a*d*i)*(log(b*x + a)*log((b*d*x + a*d)/(
```

```
b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^2*g) + 1/2*(2*B*b
*d*i*x*log(e) + (b*c*i - a*d*i)*B*log(b*x + a)^2 + 2*(B*b*d*i*x + (b*c*i*lo
g(e) - (i*log(e) - i)*a*d)*B)*log(b*x + a) - 2*(B*b*d*i*x + (b*c*i - a*d*i)
*B*log(b*x + a))*log(d*x + c))/(b^2*g)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c\,i + d\,i\,x)\,\left(A + B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)}{a\,g + b\,g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x),x)
```

```
[Out] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{i\left(\int \frac{Ac}{a+bx}\,dx + \int \frac{Adx}{a+bx}\,dx + \int \frac{Bc\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{a+bx}\,dx + \int \frac{Bdx\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{a+bx}\,dx\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x)
```

```
[Out] i*(Integral(A*c/(a + b*x), x) + Integral(A*d*x/(a + b*x), x) + Integral(B*c
*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x) + Integral(B*d*x*log(a*
e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x))/g
```

3.6 $\int \frac{(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=142

$$-\frac{di\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g^2}-\frac{i(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{bg^2(a+bx)}+\frac{BdiLi_2\left(\frac{b(c+dx)}{d(a+bx)}\right)}{b^2g^2}-\frac{Bi(c+dx)}{bg^2(a+bx)}$$

```
[Out] -B*i*(d*x+c)/b/g^2/(b*x+a)-i*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b/g^2/(b*x
+a)-d*i*(A+B*ln(e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^2/g^2+B*d*i
*polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/g^2
```

Rubi [A] time = 0.38, antiderivative size = 221, normalized size of antiderivative = 1.56, number of steps used = 15, number of rules used = 11, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.290, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{BdiPolyLog\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2g^2}+\frac{di\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g^2}-\frac{i(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g^2(a+bx)}-\frac{Bi(bc-ad)}{b^2g^2(a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^2,x]
```

```
[Out] -((B*(b*c - a*d)*i)/(b^2*g^2*(a + b*x))) - (B*d*i*Log[a + b*x])/(b^2*g^2) -
 (B*d*i*Log[a + b*x]^2)/(2*b^2*g^2) - ((b*c - a*d)*i*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(b^2*g^2*(a + b*x)) + (d*i*Log[a + b*x]*(A + B*Log[(e*(a +
b*x))/(c + d*x)]))/(b^2*g^2) + (B*d*i*Log[c + d*x])/(b^2*g^2) + (B*d*i*Log[
a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*g^2) + (B*d*i*PolyLog[2, -((d
*(a + b*x))/(b*c - a*d))])/(b^2*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(6c+6dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^2}dx = \int \left(\frac{6(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{bg^2(a+bx)^2}+\frac{6d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{bg^2(a+bx)}\right)dx$$

$$= \frac{(6d)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}dx}{bg^2}+\frac{(6(bc-ad))\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2}dx}{bg^2}$$

$$= -\frac{6(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^2(a+bx)}+\frac{6d\log(a+bx)\left(A+B\log\left(\frac{e(a+b}{c+d}\right.\right.}{b^2g^2}$$

$$= -\frac{6(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^2(a+bx)}+\frac{6d\log(a+bx)\left(A+B\log\left(\frac{e(a+b}{c+d}\right.\right.}{b^2g^2}$$

$$= -\frac{6(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^2(a+bx)}+\frac{6d\log(a+bx)\left(A+B\log\left(\frac{e(a+b}{c+d}\right.\right.}{b^2g^2}$$

$$= -\frac{6B(bc-ad)}{b^2g^2(a+bx)}-\frac{6Bd\log(a+bx)}{b^2g^2}-\frac{6(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^2(a+bx)}$$

$$= -\frac{6B(bc-ad)}{b^2g^2(a+bx)}-\frac{6Bd\log(a+bx)}{b^2g^2}-\frac{6(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^2(a+bx)}$$

$$= -\frac{6B(bc-ad)}{b^2g^2(a+bx)}-\frac{6Bd\log(a+bx)}{b^2g^2}-\frac{3Bd\log^2(a+bx)}{b^2g^2}-\frac{6(bc-ad)\left(\right.}{b^2g}$$

$$= -\frac{6B(bc-ad)}{b^2g^2(a+bx)}-\frac{6Bd\log(a+bx)}{b^2g^2}-\frac{3Bd\log^2(a+bx)}{b^2g^2}-\frac{6(bc-ad)\left(\right.}{b^2g}$$

Mathematica [A] time = 0.15, size = 175, normalized size = 1.23

$$\frac{i\left(2d(a+bx)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+B\log\left(\frac{b(c+dx)}{bc-ad}\right)+A-B\right)-2(A+B)(bc-ad)+2(aBd-bBc)\log\left(\right.\right.}{2b^2g^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x
)^2,x]
```

```
[Out] (i*(-2*(A + B)*(b*c - a*d) - B*d*(a + b*x)*Log[a + b*x]^2 + 2*(-(b*B*c) + a
*B*d)*Log[(e*(a + b*x))/(c + d*x)] + 2*B*d*(a + b*x)*Log[c + d*x] + 2*d*(a
+ b*x)*Log[a + b*x]*(A - B + B*Log[(e*(a + b*x))/(c + d*x)] + B*Log[(b*(c +
 d*x))/(b*c - a*d)]) + 2*B*d*(a + b*x)*PolyLog[2, (d*(a + b*x))/(-(b*c) + a
*d)]))/(2*b^2*g^2*(a + b*x))
```

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Adix+Aci+(Bdix+Bci)\log\left(\frac{bex+ae}{dx+c}\right)}{b^2g^2x^2+2\,abg^2x+a^2g^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algorit
hm="fricas")
```

```
[Out] integral((A*d*i*x + A*c*i + (B*d*i*x + B*c*i)*log((b*e*x + a*e)/(d*x + c)))
/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 1025, normalized size = 7.22

$$-\frac{Badei\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)bg^2}-\frac{Ba\,d^2i\ln\left(-\frac{-be+\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)d}{be}\right)\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)\,b^2g^2}+\frac{Ba\,d^2i\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{2\,(ad-bc)\,b^2g^2}+\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2,x)
```

```
[Out] -d^2*i/(a*d-b*c)/g^2*A/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+d*i/(
a*d-b*c)/g^2*A/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-d*e*i/(a*d-b*c)
/g^2*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+e*i/(a*d-b*c)/g^2*A/(1/(
d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+d^2*i/(a*d-b*c)/g^2*A/b^2*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)*a-d*i/(a*d-b*c)/g^2*A/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)*c-d*e*i/(a*d-b*c)/g^2*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*
e+(a*d-b*c)/(d*x+c)/d*e)*a+e*i/(a*d-b*c)/g^2*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c
/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d*e*i/(a*d-b*c)/g^2*B/b/(1/(d
*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+e*i/(a*d-b*c)/g^2*B/(1/(d*x+c)*a*e-1/(
d*x+c)*b*c/d*e+b/d*e)*c-d^2*i/(a*d-b*c)/g^2*B/b^2*dilog(-(-b*e+(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)*d)/b/e)*a+d*i/(a*d-b*c)/g^2*B/b*dilog(-(-b*e+(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)*d)/b/e)*c-d^2*i/(a*d-b*c)/g^2*B/b^2*ln(b/d*e+(a*d-b*c)/(d
*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+d*i/(a*d-b*c)/
g^2*B/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/
d*e)*d)/b/e)*c+1/2*d^2*i/(a*d-b*c)/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/
b^2*a-1/2*d*i/(a*d-b*c)/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-Bdi\left(\frac{\left((bx+a)\log(bx+a)+a\right)\log(dx+c)}{b^3g^2x+ab^2g^2}-\int\frac{b^2dx^2\log(e)+a^2d+\left(b^2c\log(e)+abd\right)x+\left(2\,b^2dx^2+a^2d+\cdots\right.}{b^4dg^2x^3+a^2b^2cg^2+\left(b^4cg^2+2\,ab^3dg^2\right)x^2+\left(2\,ab^3\cdots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algorit
hm="maxima")
```

```
[Out] -B*d*i*(((b*x + a)*log(b*x + a) + a)*log(d*x + c)/(b^3*g^2*x + a*b^2*g^2) -
 integrate((b^2*d*x^2*log(e) + a^2*d + (b^2*c*log(e) + a*b*d)*x + (2*b^2*d*
x^2 + a^2*d + (b^2*c + 2*a*b*d)*x)*log(b*x + a))/(b^4*d*g^2*x^3 + a^2*b^2*c
*g^2 + (b^4*c*g^2 + 2*a*b^3*d*g^2)*x^2 + (2*a*b^3*c*g^2 + a^2*b^2*d*g^2)*x)
, x)) + A*d*i*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2)) - B*c*i*
(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^2*g^2*x + a*b*g^2) + 1/(b^2*g^2*x
```

```
+ a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*log(d*x + c)/((b^2*c
- a*b*d)*g^2)) - A*c*i/(b^2*g^2*x + a*b*g^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c\,i+d\,i\,x)\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)}{{\left(a\,g+b\,g\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2,x)
```

```
[Out] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2, x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**2,x)
```

```
[Out] Timed out
```

3.7 $\int \frac{(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^3}\,dx$

Optimal. Leaf size=85

$$-\frac{i(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^3(a+bx)^2(bc-ad)}-\frac{Bi(c+dx)^2}{4g^3(a+bx)^2(bc-ad)}$$

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

Rubi [B] time = 0.28, antiderivative size = 191, normalized size of antiderivative = 2.25, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2528, 2525, 12, 44}

$$-\frac{di\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g^3(a+bx)}-\frac{i(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^2g^3(a+bx)^2}-\frac{Bd^2i\log(a+bx)}{2b^2g^3(bc-ad)}+\frac{Bd^2i\log(c+dx)}{2b^2g^3(bc-ad)}-\frac{Bi(bc-ad)}{4b^2g^3(a+bx)^2}-$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^3,x]
```

```
[Out] -(B*(b*c - a*d)*i)/(4*b^2*g^3*(a + b*x)^2) - (B*d*i)/(2*b^2*g^3*(a + b*x))
- (B*d^2*i*Log[a + b*x])/(2*b^2*(b*c - a*d)*g^3) - ((b*c - a*d)*i*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]))/(2*b^2*g^3*(a + b*x)^2) - (d*i*(A + B*Log[(e*(
a + b*x))/(c + d*x)]))/(b^2*g^3*(a + b*x)) + (B*d^2*i*Log[c + d*x])/(2*b^2*
(b*c - a*d)*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(7c+7dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^3}dx = \int\left(\frac{7(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{bg^3(a+bx)^3}+\frac{7d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{bg^3(a+bx)^2}\right)dx$$

$$=\frac{(7d)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2}dx}{bg^3}+\frac{(7(bc-ad))\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^3}dx}{bg^3}$$

$$=-\frac{7(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2b^2g^3(a+bx)^2}-\frac{7d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^3(a+bx)}+\frac{(7Bd}{}$$

$$=-\frac{7(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2b^2g^3(a+bx)^2}-\frac{7d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^3(a+bx)}+\frac{(7Bd}{}$$

$$=-\frac{7(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2b^2g^3(a+bx)^2}-\frac{7d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^3(a+bx)}+\frac{(7Bd}{}$$

$$=-\frac{7B(bc-ad)}{4b^2g^3(a+bx)^2}-\frac{7Bd}{2b^2g^3(a+bx)}-\frac{7Bd^2\log(a+bx)}{2b^2(bc-ad)g^3}-\frac{7(bc-ad)\left(\right.}{2b^2}$$

Mathematica [B] time = 0.15, size = 208, normalized size = 2.45

$$\frac{i\left(-\frac{d\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2(a+bx)}-\frac{(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^2(a+bx)^2}-\frac{B\left(-\frac{2d^2\log(a+bx)}{bc-ad}+\frac{2d^2\log(c+dx)}{bc-ad}+\frac{bc-ad}{(a+bx)^2}-\frac{2d}{a+bx}\right)}{4b^2}-\frac{Bd\left(\frac{d\log(a+bx)}{bc-ad}-\frac{d\log(c+dx)}{bc-ad}+\frac{1}{a+bx}\right)}{b^2}\right.}{g^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x
)^3,x]
```

```
[Out] (i*(-1/2*((b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^2*(a + b*x)^
2) - (d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^2*(a + b*x)) - (B*d*((a +
b*x)^(-1) + (d*Log[a + b*x])/(b*c - a*d) - (d*Log[c + d*x])/(b*c - a*d)))/b
^2 - (B*((b*c - a*d)/(a + b*x)^2 - (2*d)/(a + b*x) - (2*d^2*Log[a + b*x])/(
b*c - a*d) + (2*d^2*Log[c + d*x])/(b*c - a*d)))/(4*b^2)))/g^3
```

fricas [B] time = 0.76, size = 177, normalized size = 2.08

$$-\frac{2\left((2A+B)b^2cd-(2A+B)abd^2\right)ix+\left((2A+B)b^2c^2-(2A+B)a^2d^2\right)i+2\left(Bb^2d^2ix^2+2Bb^2cdix+Bb^2c^2i\right.}{4\left(\left(b^5c-ab^4d\right)g^3x^2+2\left(ab^4c-a^2b^3d\right)g^3x+\left(a^2b^3c-a^3b^2d\right)g^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algorit
hm="fricas")
```

```
[Out] -1/4*(2*((2*A + B)*b^2*c*d - (2*A + B)*a*b*d^2)*i*x + ((2*A + B)*b^2*c^2 -
(2*A + B)*a^2*d^2)*i + 2*(B*b^2*d^2*i*x^2 + 2*B*b^2*c*d*i*x + B*b^2*c^2*i)*
log((b*e*x + a*e)/(d*x + c)))/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2
*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3)
```

giac [A] time = 1.11, size = 117, normalized size = 1.38

$$-\frac{\left(2Bie^3\log\left(\frac{bxe+ae}{dx+c}\right)+2Aie^3+Bie^3\right)(dx+c)^2\left(\frac{bc}{(bce-ade)(bc-ad)}-\frac{ad}{(bce-ade)(bc-ad)}\right)}{4(bxe+ae)^2g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algorit
hm="giac")
```

```
[Out] -1/4*(2*B*i*e^3*log((b*x*e + a*e)/(d*x + c)) + 2*A*i*e^3 + B*i*e^3)*(d*x +
c)^2*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d))
)/((b*x*e + a*e)^2*g^3)
```

maple [B] time = 0.05, size = 394, normalized size = 4.64

$$\frac{Bad\,e^{2}i\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\,(ad-bc)^{2}\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^{2}g^{3}}-\frac{Bbc\,e^{2}i\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\,(ad-bc)^{2}\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^{2}g^{3}}+\frac{Aad\,e^{2}i}{2\,(ad-bc)^{2}\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^{2}g^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3,x)
```

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

maxima [B] time = 1.32, size = 570, normalized size = 6.71

$$-\frac{1}{4}\,Bdi\left(\frac{2\,(2\,bx+a)\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)}{b^{4}g^{3}x^{2}+2\,ab^{3}g^{3}x+a^{2}b^{2}g^{3}}+\frac{3\,abc-a^{2}d+2\left(2\,b^{2}c-abd\right)x}{\left(b^{5}c-ab^{4}d\right)g^{3}x^{2}+2\left(ab^{4}c-a^{2}b^{3}d\right)g^{3}x+\left(a^{2}b^{3}c-a^{3}b^{2}d\right)g^{3}}+\frac{2\left(2\,bcd\right.}{\left(b^{4}c^{2}-2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algorit
hm="maxima")
```

```
[Out] -1/4*B*d*i*(2*(2*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4*g^3*x^2
 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + (3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)
/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c -
a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d
+ a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c^2 - 2*a*b^3*
c*d + a^2*b^2*d^2)*g^3)) + 1/4*B*c*i*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b
^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3)
- 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2
*b*g^3) + 2*d^2*log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*
d^2*log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3)) - 1/2*(2*b*x +
a)*A*d*i/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*A*c*i/(b^3*g^3*x
^2 + 2*a*b^2*g^3*x + a^2*b*g^3)
```

mupad [B] time = 5.58, size = 197, normalized size = 2.32

$$-\frac{x\,(2\,A\,b\,d\,i+B\,b\,d\,i)+A\,a\,d\,i+A\,b\,c\,i+\frac{B\,a\,d\,i}{2}+\frac{B\,b\,c\,i}{2}}{2\,a^{2}\,b^{2}\,g^{3}+4\,a\,b^{3}\,g^{3}\,x+2\,b^{4}\,g^{3}\,x^{2}}-\frac{\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\left(\frac{B\,c\,i}{2\,b^{2}\,g^{3}}+\frac{B\,a\,d\,i}{2\,b^{3}\,g^{3}}+\frac{B\,d\,i\,x}{b^{2}\,g^{3}}\right)}{2\,a\,x+b\,x^{2}+\frac{a^{2}}{b}}-\frac{B\,d^{2}\,i\,\mathrm{atan}\left(\frac{b\,c\,2\mathrm{i}+b}{a\,d-}\right.}{b^{2}\,g^{3}\,(a\,d-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^3,x)
```

```
[Out] - (x*(2*A*b*d*i + B*b*d*i) + A*a*d*i + A*b*c*i + (B*a*d*i)/2 + (B*b*c*i)/2)
/(2*a^2*b^2*g^3 + 2*b^4*g^3*x^2 + 4*a*b^3*g^3*x) - (log((e*(a + b*x))/(c +
d*x))*((B*c*i)/(2*b^2*g^3) + (B*a*d*i)/(2*b^3*g^3) + (B*d*i*x)/(b^2*g^3)))/
(2*a*x + b*x^2 + a^2/b) - (B*d^2*i*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1
i)*1i)/(b^2*g^3*(a*d - b*c))
```

sympy [B] time = 6.25, size = 384, normalized size = 4.52

$$-\frac{Bd^2 i\log\left(x+\frac{-\frac{Ba^2d^4i}{ad-bc}+\frac{2Babcd^3i}{ad-bc}+Bad^3i-\frac{Bb^2c^2d^2i}{ad-bc}+Bbcd^2i}{2Bbd^3i}\right)}{2b^2g^3\left(ad-bc\right)}+\frac{Bd^2 i\log\left(x+\frac{\frac{Ba^2d^4i}{ad-bc}-\frac{2Babcd^3i}{ad-bc}+Bad^3i+\frac{Bb^2c^2d^2i}{ad-bc}+Bbcd^2i}{2Bbd^3i}\right)}{2b^2g^3\left(ad-bc\right)}+\frac{-2Aadi-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3,x)
```

```
[Out] -B*d**2*i*log(x + (-B*a**2*d**4*i/(a*d - b*c) + 2*B*a*b*c*d**3*i/(a*d - b*c
) + B*a*d**3*i - B*b**2*c**2*d**2*i/(a*d - b*c) + B*b*c*d**2*i)/(2*B*b*d**3
*i))/(2*b**2*g**3*(a*d - b*c)) + B*d**2*i*log(x + (B*a**2*d**4*i/(a*d - b*c
) - 2*B*a*b*c*d**3*i/(a*d - b*c) + B*a*d**3*i + B*b**2*c**2*d**2*i/(a*d - b
*c) + B*b*c*d**2*i)/(2*B*b*d**3*i))/(2*b**2*g**3*(a*d - b*c)) + (-2*A*a*d*i
 - 2*A*b*c*i - B*a*d*i - B*b*c*i + x*(-4*A*b*d*i - 2*B*b*d*i))/(4*a**2*b**2
*g**3 + 8*a*b**3*g**3*x + 4*b**4*g**3*x**2) + (-B*a*d*i - B*b*c*i - 2*B*b*d
*i*x)*log(e*(a + b*x)/(c + d*x))/(2*a**2*b**2*g**3 + 4*a*b**3*g**3*x + 2*b*
*4*g**3*x**2)
```

3.8 $\int \frac{(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^4}\,dx$

Optimal. Leaf size=173

$$-\frac{bi(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3g^4(a+bx)^3(bc-ad)^2}+\frac{di(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^4(a+bx)^2(bc-ad)^2}-\frac{bBi(c+dx)^3}{9g^4(a+bx)^3(bc-ad)^2}+\frac{Bdi(c+dx)^2}{4g^4(a+bx)^2(bc-}$$

```
[Out] 1/4*B*d*i*(d*x+c)^2/(-a*d+b*c)^2/g^4/(b*x+a)^2-1/9*b*B*i*(d*x+c)^3/(-a*d+b*
c)^2/g^4/(b*x+a)^3+1/2*d*i*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)
^2/g^4/(b*x+a)^2-1/3*b*i*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^2
/g^4/(b*x+a)^3
```

Rubi [A] time = 0.34, antiderivative size = 225, normalized size of antiderivative = 1.30, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2528, 2525, 12, 44}

$$-\frac{di\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^2g^4(a+bx)^2}-\frac{i(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^2g^4(a+bx)^3}+\frac{Bd^2i}{6b^2g^4(a+bx)(bc-ad)}+\frac{Bd^3i\log(a+bx)}{6b^2g^4(bc-ad)^2}-\frac{Bd^3i\log(}{6b^2g^4(bc}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^4,x]
```

```
[Out] -(B*(b*c - a*d)*i)/(9*b^2*g^4*(a + b*x)^3) - (B*d*i)/(12*b^2*g^4*(a + b*x)^
2) + (B*d^2*i)/(6*b^2*(b*c - a*d)*g^4*(a + b*x)) + (B*d^3*i*Log[a + b*x])/(
6*b^2*(b*c - a*d)^2*g^4) - ((b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x
)]))/(3*b^2*g^4*(a + b*x)^3) - (d*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(
2*b^2*g^4*(a + b*x)^2) - (B*d^3*i*Log[c + d*x])/(6*b^2*(b*c - a*d)^2*g^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(8c+8dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^4}\,dx = \int \left(\frac{8(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{bg^4(a+bx)^4} + \frac{8d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{bg^4(a+bx)^3}\right)dx$$

$$= \frac{(8d)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^3}\,dx}{bg^4} + \frac{(8(bc-ad))\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^4}\,dx}{bg^4}$$

$$= -\frac{8(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^2g^4(a+bx)^3} - \frac{4d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^4(a+bx)^2} + \frac{(4Bd}{}$$

$$= -\frac{8(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^2g^4(a+bx)^3} - \frac{4d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^4(a+bx)^2} + \frac{(4Bd}{}$$

$$= -\frac{8(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^2g^4(a+bx)^3} - \frac{4d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^4(a+bx)^2} + \frac{(4Bd}{}$$

$$= -\frac{8B(bc-ad)}{9b^2g^4(a+bx)^3} - \frac{2Bd}{3b^2g^4(a+bx)^2} + \frac{4Bd^2}{3b^2(bc-ad)g^4(a+bx)} + \frac{4Bd^3}{3b^2(}$$

Mathematica [A] time = 0.39, size = 187, normalized size = 1.08

$$-\frac{i\left(\frac{12Abc}{(a+bx)^3} + \frac{18Ad}{(a+bx)^2} - \frac{12aAd}{(a+bx)^3} - \frac{6Bd^3\log(a+bx)}{(bc-ad)^2} + \frac{6Bd^3\log(c+dx)}{(bc-ad)^2} - \frac{6Bd^2}{(a+bx)(bc-ad)} + \frac{6B(ad+2bc+3bdx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^3} + \frac{4bBc}{(a+bx)^3} + \right.}{36b^2g^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x
)^4,x]
```

```
[Out] -1/36*(i*((12*A*b*c)/(a + b*x)^3 + (4*b*B*c)/(a + b*x)^3 - (12*a*A*d)/(a +
b*x)^3 - (4*a*B*d)/(a + b*x)^3 + (18*A*d)/(a + b*x)^2 + (3*B*d)/(a + b*x)^2
 - (6*B*d^2)/((b*c - a*d)*(a + b*x)) - (6*B*d^3*Log[a + b*x])/(b*c - a*d)^2
 + (6*B*(2*b*c + a*d + 3*b*d*x)*Log[(e*(a + b*x))/(c + d*x)])/(a + b*x)^3 +
 (6*B*d^3*Log[c + d*x])/(b*c - a*d)^2))/(b^2*g^4)
```

fricas [B] time = 1.08, size = 363, normalized size = 2.10

$$\frac{6\left(Bb^3cd^2 - Bab^2d^3\right)ix^2 - 3\left((6A+B)b^3c^2d - 6(2A+B)ab^2cd^2 + (6A+5B)a^2bd^3\right)ix - \left(4(3A+B)b^3c^3 - 9\right.}{36\left(\left(b^7c^2 - 2ab^6cd + a^2b^5d^2\right)g^4x^3 + 3\left(ab^6c^2 - 2a^2b^5cd + a^3\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algorit
hm="fricas")
```

```
[Out] 1/36*(6*(B*b^3*c*d^2 - B*a*b^2*d^3)*i*x^2 - 3*((6*A + B)*b^3*c^2*d - 6*(2*A
 + B)*a*b^2*c*d^2 + (6*A + 5*B)*a^2*b*d^3)*i*x - (4*(3*A + B)*b^3*c^3 - 9*(
2*A + B)*a*b^2*c^2*d + (6*A + 5*B)*a^3*d^3)*i + 6*(B*b^3*d^3*i*x^3 + 3*B*a*
b^2*d^3*i*x^2 - 3*(B*b^3*c^2*d - 2*B*a*b^2*c*d^2)*i*x - (2*B*b^3*c^3 - 3*B*
a*b^2*c^2*d)*i)*log((b*e*x + a*e)/(d*x + c)))/((b^7*c^2 - 2*a*b^6*c*d + a^2
*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3
```

```
*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b
^3*c*d + a^5*b^2*d^2)*g^4)
```

giac [A] time = 1.46, size = 244, normalized size = 1.41

$$-\frac{\left(12\,Bbie^4\log\left(\frac{bxe+ae}{dx+c}\right)-\frac{18\,(bxe+ae)Bdie^3\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c}+12\,Abie^4+4\,Bbie^4-\frac{18\,(bxe+ae)Adie^3}{dx+c}-\frac{9\,(bxe+ae)Bdie^3}{dx+c}\right)\left(\frac{bc}{(bce-ade)(bc-\cdots}\right.}{36\left(\frac{(bxe+ae)^3bcg^4}{(dx+c)^3}-\frac{(bxe+ae)^3adg^4}{(dx+c)^3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algorit
hm="giac")
```

```
[Out] -1/36*(12*B*b*i*e^4*log((b*x*e + a*e)/(d*x + c)) - 18*(b*x*e + a*e)*B*d*i*e
^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 12*A*b*i*e^4 + 4*B*b*i*e^4 - 18
*(b*x*e + a*e)*A*d*i*e^3/(d*x + c) - 9*(b*x*e + a*e)*B*d*i*e^3/(d*x + c))*(
b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*
x*e + a*e)^3*b*c*g^4/(d*x + c)^3 - (b*x*e + a*e)^3*a*d*g^4/(d*x + c)^3)
```

maple [B] time = 0.05, size = 804, normalized size = 4.65

$$-\frac{Babd\,e^3 i\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{3\,(ad-bc)^3\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^3 g^4}+\frac{B\,b^2c\,e^3 i\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{3\,(ad-bc)^3\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^3 g^4}-\frac{Aabd\,e^3 i}{3\,(ad-bc)^3\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^3 g\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4,x)
```

```
[Out] 1/2*d^2*e^2*i/(a*d-b*c)^3/g^4*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a
-1/2*d*e^2*i/(a*d-b*c)^3/g^4*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*b*
c-1/3*d*e^3*i/(a*d-b*c)^3/g^4*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3
*a+1/3*e^3*i/(a*d-b*c)^3/g^4*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
3*c+1/2*d^2*e^2*i/(a*d-b*c)^3/g^4*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*d*e^2*i/(a*d-b*c)^3/g^4*B/(1/(d*x+
c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/4*d
^2*e^2*i/(a*d-b*c)^3/g^4*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/4*
d*e^2*i/(a*d-b*c)^3/g^4*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*b*c-1/3
*d*e^3*i/(a*d-b*c)^3/g^4*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/3*e^3*i/(a*d-b*c)^3/g^4*B*b^2/(1/(d*x+c)*a*
e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/9*d*e^3*i/
(a*d-b*c)^3/g^4*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+1/9*e^3*i/(
a*d-b*c)^3/g^4*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c
```

maxima [B] time = 1.38, size = 933, normalized size = 5.39

$$-\frac{1}{36}\,Bdi\left(\frac{6\,(3\,bx+a)\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)}{b^5g^4x^3+3\,ab^4g^4x^2+3\,a^2b^3g^4x+a^3b^2g^4}+\frac{5\,ab^2c^2-22\,a^2bcd+5\,a^3d^2-6\,(\cdots}{\left(b^7c^2-2\,ab^6cd+a^2b^5d^2\right)g^4x^3+3\left(ab^6c^2-2\,a^2b^5cd+a^3b^4\cdots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algorit
hm="maxima")
```

```
[Out] -1/36*B*d*i*(6*(3*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^4*x^
3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) + (5*a*b^2*c^2 - 22*a^
2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b
```

```
^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3
*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3
*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)
*g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^
2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*
c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4)) - 1/18*B*c*i*((6
*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)
*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b
^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^
2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*log(b*e*x/(d*
x + c) + a*e/(d*x + c))/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x +
a^3*b*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2
 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b
^2*c*d^2 - a^3*b*d^3)*g^4)) - 1/6*(3*b*x + a)*A*d*i/(b^5*g^4*x^3 + 3*a*b^4*
g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*A*c*i/(b^4*g^4*x^3 + 3*a*b^3
*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4)
```

mupad [B] time = 5.87, size = 361, normalized size = 2.09

$$-\frac{\frac{6\,A\,a^2\,d^2\,i-12\,A\,b^2\,c^2\,i+5\,B\,a^2\,d^2\,i-4\,B\,b^2\,c^2\,i+6\,A\,a\,b\,c\,d\,i+5\,B\,a\,b\,c\,d\,i}{6\,(a\,d-b\,c)}+\frac{x\,\left(6\,A\,a\,b\,d^2\,i+5\,B\,a\,b\,d^2\,i-6\,A\,b^2\,c\,d\,i-B\,b^2\,c\,d\,i\right)}{2\,(a\,d-b\,c)}+\frac{B\,b^2\,d^2\,i\,x^2}{a\,d-b\,c}}{6\,a^3\,b^2\,g^4+18\,a^2\,b^3\,g^4\,x+18\,a\,b^4\,g^4\,x^2+6\,b^5\,g^4\,x^3}-\ln\left(\ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^4,x)
```

```
[Out] - ((6*A*a^2*d^2*i - 12*A*b^2*c^2*i + 5*B*a^2*d^2*i - 4*B*b^2*c^2*i + 6*A*a*
b*c*d*i + 5*B*a*b*c*d*i)/(6*(a*d - b*c)) + (x*(6*A*a*b*d^2*i + 5*B*a*b*d^2*
i - 6*A*b^2*c*d*i - B*b^2*c*d*i))/(2*(a*d - b*c)) + (B*b^2*d^2*i*x^2)/(a*d
- b*c))/(6*a^3*b^2*g^4 + 6*b^5*g^4*x^3 + 18*a^2*b^3*g^4*x + 18*a*b^4*g^4*x^
2) - (log((e*(a + b*x))/(c + d*x))*((B*c*i)/(3*b^2*g^4) + (B*a*d*i)/(6*b^3*
g^4) + (B*d*i*x)/(2*b^2*g^4)))/(3*a^2*x + a^3/b + b^2*x^3 + 3*a*b*x^2) - (B
*d^3*i*atanh((6*b^4*c^2*g^4 - 6*a^2*b^2*d^2*g^4)/(6*b^2*g^4*(a*d - b*c)^2)
- (2*b*d*x)/(a*d - b*c)))/(3*b^2*g^4*(a*d - b*c)^2)
```

sympy [B] time = 11.30, size = 629, normalized size = 3.64

$$-\frac{Bd^3i\log\left(x+\frac{-\frac{Ba^3d^6i}{(ad-bc)^2}+\frac{3Ba^2bcd^5i}{(ad-bc)^2}-\frac{3Bab^2c^2d^4i}{(ad-bc)^2}+Bad^4i+\frac{Bb^3c^3d^3i}{(ad-bc)^2}+Bbcd^3i}{2Bbd^4i}\right)}{6b^2g^4\,(ad-bc)^2}+\frac{Bd^3i\log\left(x+\frac{\frac{Ba^3d^6i}{(ad-bc)^2}-\frac{3Ba^2bcd^5i}{(ad-bc)^2}+\frac{3Bab^2c^2d^4i}{(ad-bc)^2}+Bad^4i-\ldots}{2Bbd^4i}\right)}{6b^2g^4\,(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4,x)
```

```
[Out] -B*d**3*i*log(x + (-B*a**3*d**6*i/(a*d - b*c)**2 + 3*B*a**2*b*c*d**5*i/(a*d
 - b*c)**2 - 3*B*a*b**2*c**2*d**4*i/(a*d - b*c)**2 + B*a*d**4*i + B*b**3*c*
*3*d**3*i/(a*d - b*c)**2 + B*b*c*d**3*i)/(2*B*b*d**4*i))/(6*b**2*g**4*(a*d
- b*c)**2) + B*d**3*i*log(x + (B*a**3*d**6*i/(a*d - b*c)**2 - 3*B*a**2*b*c*
d**5*i/(a*d - b*c)**2 + 3*B*a*b**2*c**2*d**4*i/(a*d - b*c)**2 + B*a*d**4*i
- B*b**3*c**3*d**3*i/(a*d - b*c)**2 + B*b*c*d**3*i)/(2*B*b*d**4*i))/(6*b**2
*g**4*(a*d - b*c)**2) + (-B*a*d*i - 2*B*b*c*i - 3*B*b*d*i*x)*log(e*(a + b*x
)/(c + d*x))/(6*a**3*b**2*g**4 + 18*a**2*b**3*g**4*x + 18*a*b**4*g**4*x**2
+ 6*b**5*g**4*x**3) + (-6*A*a**2*d**2*i - 6*A*a*b*c*d*i + 12*A*b**2*c**2*i
- 5*B*a**2*d**2*i - 5*B*a*b*c*d*i + 4*B*b**2*c**2*i - 6*B*b**2*d**2*i*x**2
+ x*(-18*A*a*b*d**2*i + 18*A*b**2*c*d*i - 15*B*a*b*d**2*i + 3*B*b**2*c*d*i)
)/(36*a**4*b**2*d*g**4 - 36*a**3*b**3*c*g**4 + x**3*(36*a*b**5*d*g**4 - 36*
b**6*c*g**4) + x**2*(108*a**2*b**4*d*g**4 - 108*a*b**5*c*g**4) + x*(108*a**
3*b**3*d*g**4 - 108*a**2*b**4*c*g**4))
```

3.9 $\int \frac{(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^5}\,dx$

Optimal. Leaf size=269

$$-\frac{b^2 i(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4g^5(a+bx)^4(bc-ad)^3}-\frac{d^2 i(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^5(a+bx)^2(bc-ad)^3}+\frac{2bdi(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3g^5(a+bx)^3(bc-ad)^3}-\frac{\cdots}{16g\cdots}$$

```
[Out] -1/4*B*d^2*i*(d*x+c)^2/(-a*d+b*c)^3/g^5/(b*x+a)^2+2/9*b*B*d*i*(d*x+c)^3/(-a
*d+b*c)^3/g^5/(b*x+a)^3-1/16*b^2*B*i*(d*x+c)^4/(-a*d+b*c)^3/g^5/(b*x+a)^4-1
/2*d^2*i*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^5/(b*x+a)^2+2
/3*b*d*i*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^5/(b*x+a)^3-1
/4*b^2*i*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^5/(b*x+a)^4
```

Rubi [A] time = 0.39, antiderivative size = 257, normalized size of antiderivative = 0.96, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {2528, 2525, 12, 44}

$$-\frac{di\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^2g^5(a+bx)^3}-\frac{i(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4b^2g^5(a+bx)^4}-\frac{Bd^3i}{12b^2g^5(a+bx)(bc-ad)^2}+\frac{Bd^2i}{24b^2g^5(a+bx)^2(bc-ad)}-\cdots$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^5,x]
```

```
[Out] -(B*(b*c - a*d)*i)/(16*b^2*g^5*(a + b*x)^4) - (B*d*i)/(36*b^2*g^5*(a + b*x)
^3) + (B*d^2*i)/(24*b^2*(b*c - a*d)*g^5*(a + b*x)^2) - (B*d^3*i)/(12*b^2*(b
*c - a*d)^2*g^5*(a + b*x)) - (B*d^4*i*Log[a + b*x])/(12*b^2*(b*c - a*d)^3*g
^5) - ((b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(4*b^2*g^5*(a +
b*x)^4) - (d*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^2*g^5*(a + b*x)^3
) + (B*d^4*i*Log[c + d*x])/(12*b^2*(b*c - a*d)^3*g^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
```

```
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(9c+9dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^5}\,dx = \int \left(\frac{9(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{bg^5(a+bx)^5} + \frac{9d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{bg^5(a+bx)^4}\right) dx$$

$$= \frac{(9d)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^4}\,dx}{bg^5} + \frac{(9(bc-ad))\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^5}\,dx}{bg^5}$$

$$= -\frac{9(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4b^2g^5(a+bx)^4} - \frac{3d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^5(a+bx)^3} + \frac{(3Bd}{}$$

$$= -\frac{9(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4b^2g^5(a+bx)^4} - \frac{3d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^5(a+bx)^3} + \frac{(3Bd}{}$$

$$= -\frac{9(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4b^2g^5(a+bx)^4} - \frac{3d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^5(a+bx)^3} + \frac{(3Bd}{}$$

$$= -\frac{9B(bc-ad)}{16b^2g^5(a+bx)^4} - \frac{Bd}{4b^2g^5(a+bx)^3} + \frac{3Bd^2}{8b^2(bc-ad)g^5(a+bx)^2} - \frac{}{4b^2}$$

Mathematica [A] time = 0.47, size = 210, normalized size = 0.78

$$-\frac{i\left(\frac{36Abc}{(a+bx)^4} + \frac{48Ad}{(a+bx)^3} - \frac{36aAd}{(a+bx)^4} + \frac{12Bd^4\log(a+bx)}{(bc-ad)^3} - \frac{12Bd^4\log(c+dx)}{(bc-ad)^3} + \frac{12Bd^3}{(a+bx)(bc-ad)^2} - \frac{6Bd^2}{(a+bx)^2(bc-ad)} + \frac{12B(ad+3bc+4bdx)\log}{(a+bx)^4}\right.}{144b^2g^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x
)^5,x]
```

```
[Out] -1/144*(i*((36*A*b*c)/(a + b*x)^4 + (9*b*B*c)/(a + b*x)^4 - (36*a*A*d)/(a +
 b*x)^4 - (9*a*B*d)/(a + b*x)^4 + (48*A*d)/(a + b*x)^3 + (4*B*d)/(a + b*x)^
3 - (6*B*d^2)/((b*c - a*d)*(a + b*x)^2) + (12*B*d^3)/((b*c - a*d)^2*(a + b*
x)) + (12*B*d^4*Log[a + b*x])/(b*c - a*d)^3 + (12*B*(3*b*c + a*d + 4*b*d*x)
*Log[(e*(a + b*x))/(c + d*x)])/(a + b*x)^4 - (12*B*d^4*Log[c + d*x])/(b*c -
 a*d)^3))/(b^2*g^5)
```

fricas [B] time = 0.93, size = 602, normalized size = 2.24

$$-\frac{12\left(Bb^4cd^3 - Bab^3d^4\right)ix^3 - 6\left(Bb^4c^2d^2 - 8\,Bab^3cd^3 + 7\,Ba^2b^2d^4\right)ix^2 + 4\left((12\,A+B)b^4c^3d - 6\,(6\,A+B)ab^3c^2d\right.}{144\left(\left(b^9c^3 - 3\,ab^8c^2d + 3\,a^2b^7cd^2 - a^3b\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algorit
hm="fricas")
```

```
[Out] -1/144*(12*(B*b^4*c*d^3 - B*a*b^3*d^4)*i*x^3 - 6*(B*b^4*c^2*d^2 - 8*B*a*b^3
*c*d^3 + 7*B*a^2*b^2*d^4)*i*x^2 + 4*((12*A + B)*b^4*c^3*d - 6*(6*A + B)*a*b
^3*c^2*d^2 + 18*(2*A + B)*a^2*b^2*c*d^3 - (12*A + 13*B)*a^3*b*d^4)*i*x + (9
```

```
*(4*A + B)*b^4*c^4 - 32*(3*A + B)*a*b^3*c^3*d + 36*(2*A + B)*a^2*b^2*c^2*d^
2 - (12*A + 13*B)*a^4*d^4)*i + 12*(B*b^4*d^4*i*x^4 + 4*B*a*b^3*d^4*i*x^3 +
6*B*a^2*b^2*d^4*i*x^2 + 4*(B*b^4*c^3*d - 3*B*a*b^3*c^2*d^2 + 3*B*a^2*b^2*c*
d^3)*i*x + (3*B*b^4*c^4 - 8*B*a*b^3*c^3*d + 6*B*a^2*b^2*c^2*d^2)*i)*log((b*
e*x + a*e)/(d*x + c)))/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^
6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5
*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^
4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b
^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*
d^3)*g^5)
```

giac [A] time = 1.44, size = 391, normalized size = 1.45

$$-\frac{\left(36\,Bb^2ie^5\log\left(\frac{bxe+ae}{dx+c}\right)-\frac{96\,(bxe+ae)Bbdie^4\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c}+\frac{72\,(bxe+ae)^2Bd^2ie^3\log\left(\frac{bxe+ae}{dx+c}\right)}{(dx+c)^2}+36\,Ab^2ie^5+9\,Bb^2ie^5-\frac{96\,(bxe+ae)A}{dx+c}\right.}{144\left(\frac{(bxe+ae)^4b^2c^2g^5}{(dx+c)^4}-\frac{2\,(bxe+ae)^4abcdg^5}{(dx+c)^4}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algorit
hm="giac")
```

```
[Out] -1/144*(36*B*b^2*i*e^5*log((b*x*e + a*e)/(d*x + c)) - 96*(b*x*e + a*e)*B*b*
d*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 72*(b*x*e + a*e)^2*B*d^2*i
*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 36*A*b^2*i*e^5 + 9*B*b^2*i*
e^5 - 96*(b*x*e + a*e)*A*b*d*i*e^4/(d*x + c) - 32*(b*x*e + a*e)*B*b*d*i*e^4
/(d*x + c) + 72*(b*x*e + a*e)^2*A*d^2*i*e^3/(d*x + c)^2 + 36*(b*x*e + a*e)^
2*B*d^2*i*e^3/(d*x + c)^2)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e
 - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^4*b^2*c^2*g^5/(d*x + c)^4 - 2*(b*x*e
 + a*e)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x*e + a*e)^4*a^2*d^2*g^5/(d*x + c)^4
)
```

maple [B] time = 0.05, size = 1226, normalized size = 4.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^5,x)
```

```
[Out] 1/2*d^3*e^2*i/(a*d-b*c)^4/g^5*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a
-1/2*d^2*e^2*i/(a*d-b*c)^4/g^5*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*
b*c-2/3*d^2*e^3*i/(a*d-b*c)^4/g^5*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)^3*a+2/3*d*e^3*i/(a*d-b*c)^4/g^5*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b
/d*e)^3*c+1/4*d*e^4*i/(a*d-b*c)^4/g^5*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*
e+b/d*e)^4*a-1/4*e^4*i/(a*d-b*c)^4/g^5*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)^4*c+1/2*d^3*e^2*i/(a*d-b*c)^4/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*d^2*e^2*i/(a*d-b*c)^4/g^
5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*b*c+1/4*d^3*e^2*i/(a*d-b*c)^4/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^2*a-1/4*d^2*e^2*i/(a*d-b*c)^4/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^2*b*c-2/3*d^2*e^3*i/(a*d-b*c)^4/g^5*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2/3*d*e^3*i/(a*d-b*c)^4/g^5*B
*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)*c-2/9*d^2*e^3*i/(a*d-b*c)^4/g^5*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^3*a+2/9*d*e^3*i/(a*d-b*c)^4/g^5*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
+b/d*e)^3*c+1/4*d*e^4*i/(a*d-b*c)^4/g^5*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/4*e^4*i/(a*d-b*c)^4/g^5*B*
b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
```

```
e)*c+1/16*d*e^4*i/(a*d-b*c)^4/g^5*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^4*a-1/16*e^4*i/(a*d-b*c)^4/g^5*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)^4*c
```

maxima [B] time = 1.80, size = 1386, normalized size = 5.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algorit
hm="maxima")
```

```
[Out] -1/144*B*d*i*(12*(4*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^5*
x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5)
+ (7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4
*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*
x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/(
(b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^
8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b
^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*
b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5
*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^
3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a
^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^
6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*
g^5)) + 1/48*B*c*i*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b
*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*
b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 -
a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a
^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 -
a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 -
 a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^
7*b*d^3)*g^5) - 12*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^5*x^4 + 4*a*
b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) + 12*d^4*log
(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 +
 a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^
3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5)) - 1/12*(4*b*x + a)*A*d*i/(b^
6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2
*g^5) - 1/4*A*c*i/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^
3*b^2*g^5*x + a^4*b*g^5)
```

mupad [B] time = 6.46, size = 590, normalized size = 2.19

$$\frac{B\,d^4\,i\,\mathrm{atanh}\left(\frac{12\,a^3\,b^2\,d^3\,g^5-12\,a^2\,b^3\,c\,d^2\,g^5-12\,a\,b^4\,c^2\,d\,g^5+12\,b^5\,c^3\,g^5}{12\,b^2\,g^5\,(a\,d-b\,c)^3}+\frac{2\,b\,d\,x\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}{(a\,d-b\,c)^3}\right)}{6\,b^2\,g^5\,(a\,d-b\,c)^3}-\frac{\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\,\left(\frac{B\,c\,i}{4\,b^2\,g^5}+\frac{B\,a}{12\,b}\right.}{4\,a^3\,x+\frac{a^4}{b}+b^3\,x^4+6\,a^2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^5,x)
```

```
[Out] (B*d^4*i*atanh((12*b^5*c^3*g^5 + 12*a^3*b^2*d^3*g^5 - 12*a*b^4*c^2*d*g^5 -
12*a^2*b^3*c*d^2*g^5)/(12*b^2*g^5*(a*d - b*c)^3) + (2*b*d*x*(a^2*d^2 + b^2*
c^2 - 2*a*b*c*d))/(a*d - b*c)^3))/(6*b^2*g^5*(a*d - b*c)^3) - (log((e*(a +
b*x))/(c + d*x))*((B*c*i)/(4*b^2*g^5) + (B*a*d*i)/(12*b^3*g^5) + (B*d*i*x)/
(3*b^2*g^5)))/(4*a^3*x + a^4/b + b^3*x^4 + 6*a^2*b*x^2 + 4*a*b^2*x^3) - ((1
2*A*a^3*d^3*i + 36*A*b^3*c^3*i + 13*B*a^3*d^3*i + 9*B*b^3*c^3*i - 60*A*a*b^
2*c^2*d*i + 12*A*a^2*b*c*d^2*i - 23*B*a*b^2*c^2*d*i + 13*B*a^2*b*c*d^2*i)/(
12*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x*(12*A*a^2*b*d^3*i + 13*B*a^2*b*d^3
*i + 12*A*b^3*c^2*d*i + B*b^3*c^2*d*i - 24*A*a*b^2*c*d^2*i - 5*B*a*b^2*c*d^
```

```
2*i))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (d*x^2*(B*b^3*c*d*i - 7*B*a*b^2
*d^2*i))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B*b^3*d^3*i*x^3)/(a^2*d^2 +
 b^2*c^2 - 2*a*b*c*d))/(12*a^4*b^2*g^5 + 12*b^6*g^5*x^4 + 48*a^3*b^3*g^5*x
+ 48*a*b^5*g^5*x^3 + 72*a^2*b^4*g^5*x^2)
```

sympy [B] time = 18.73, size = 928, normalized size = 3.45

$$-\frac{Bd^4 i \log\left(x + \frac{-\frac{Ba^4d^8i}{(ad-bc)^3} + \frac{4Ba^3bcd^7i}{(ad-bc)^3} - \frac{6Ba^2b^2c^2d^6i}{(ad-bc)^3} + \frac{4Bab^3c^3d^5i}{(ad-bc)^3} + Bad^5i - \frac{Bb^4c^4d^4i}{(ad-bc)^3} + Bbcd^4i}{2Bbd^5i}\right)}{12b^2g^5(ad-bc)^3} + \frac{Bd^4 i \log\left(x + \frac{\frac{Ba^4d^8i}{(ad-bc)^3} - \frac{4Ba^3bcd^7i}{(ad-bc)^3} + \frac{6Ba^2b^2c^2d^6i}{(ad-bc)^3} - \frac{4B}{(}\cdots}{2Bb\cdots}\right)}{12b^2g^5(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**5,x)
```

```
[Out] -B*d**4*i*log(x + (-B*a**4*d**8*i/(a*d - b*c)**3 + 4*B*a**3*b*c*d**7*i/(a*d
 - b*c)**3 - 6*B*a**2*b**2*c**2*d**6*i/(a*d - b*c)**3 + 4*B*a*b**3*c**3*d**
5*i/(a*d - b*c)**3 + B*a*d**5*i - B*b**4*c**4*d**4*i/(a*d - b*c)**3 + B*b*c
*d**4*i)/(2*B*b*d**5*i))/(12*b**2*g**5*(a*d - b*c)**3) + B*d**4*i*log(x + (
B*a**4*d**8*i/(a*d - b*c)**3 - 4*B*a**3*b*c*d**7*i/(a*d - b*c)**3 + 6*B*a**
2*b**2*c**2*d**6*i/(a*d - b*c)**3 - 4*B*a*b**3*c**3*d**5*i/(a*d - b*c)**3 +
 B*a*d**5*i + B*b**4*c**4*d**4*i/(a*d - b*c)**3 + B*b*c*d**4*i)/(2*B*b*d**5
*i))/(12*b**2*g**5*(a*d - b*c)**3) + (-B*a*d*i - 3*B*b*c*i - 4*B*b*d*i*x)*l
og(e*(a + b*x)/(c + d*x))/(12*a**4*b**2*g**5 + 48*a**3*b**3*g**5*x + 72*a**
2*b**4*g**5*x**2 + 48*a*b**5*g**5*x**3 + 12*b**6*g**5*x**4) + (-12*A*a**3*d
**3*i - 12*A*a**2*b*c*d**2*i + 60*A*a*b**2*c**2*d*i - 36*A*b**3*c**3*i - 13
*B*a**3*d**3*i - 13*B*a**2*b*c*d**2*i + 23*B*a*b**2*c**2*d*i - 9*B*b**3*c**
3*i - 12*B*b**3*d**3*i*x**3 + x**2*(-42*B*a*b**2*d**3*i + 6*B*b**3*c*d**2*i
) + x*(-48*A*a**2*b*d**3*i + 96*A*a*b**2*c*d**2*i - 48*A*b**3*c**2*d*i - 52
*B*a**2*b*d**3*i + 20*B*a*b**2*c*d**2*i - 4*B*b**3*c**2*d*i))/(144*a**6*b**
2*d**2*g**5 - 288*a**5*b**3*c*d*g**5 + 144*a**4*b**4*c**2*g**5 + x**4*(144*
a**2*b**6*d**2*g**5 - 288*a*b**7*c*d*g**5 + 144*b**8*c**2*g**5) + x**3*(576
*a**3*b**5*d**2*g**5 - 1152*a**2*b**6*c*d*g**5 + 576*a*b**7*c**2*g**5) + x*
*2*(864*a**4*b**4*d**2*g**5 - 1728*a**3*b**5*c*d*g**5 + 864*a**2*b**6*c**2*
g**5) + x*(576*a**5*b**3*d**2*g**5 - 1152*a**4*b**4*c*d*g**5 + 576*a**3*b**
5*c**2*g**5))
```

3.10 $\int (ag+bgx)^3(ci+dix)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\,dx$

Optimal. Leaf size=423

$$\frac{b^3g^3i^2(c+dx)^6\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{6d^4}-\frac{3b^2g^3i^2(c+dx)^5(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5d^4}-\frac{g^3i^2(c+dx)^3(bc-ad)^3}{3a}$$

```
[Out] 1/60*B*(-a*d+b*c)^5*g^3*i^2*x/b^2/d^3+1/120*B*(-a*d+b*c)^4*g^3*i^2*(d*x+c)^
2/b/d^4-19/180*B*(-a*d+b*c)^3*g^3*i^2*(d*x+c)^3/d^4+13/120*b*B*(-a*d+b*c)^2
*g^3*i^2*(d*x+c)^4/d^4-1/30*b^2*B*(-a*d+b*c)*g^3*i^2*(d*x+c)^5/d^4+1/60*B*(
-a*d+b*c)^6*g^3*i^2*ln((b*x+a)/(d*x+c))/b^3/d^4-1/3*(-a*d+b*c)^3*g^3*i^2*(d
*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^4+3/4*b*(-a*d+b*c)^2*g^3*i^2*(d*x+c)^
4*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^4-3/5*b^2*(-a*d+b*c)*g^3*i^2*(d*x+c)^5*(A+B
*ln(e*(b*x+a)/(d*x+c)))/d^4+1/6*b^3*g^3*i^2*(d*x+c)^6*(A+B*ln(e*(b*x+a)/(d*
x+c)))/d^4+1/60*B*(-a*d+b*c)^6*g^3*i^2*ln(d*x+c)/b^3/d^4
```

Rubi [A] time = 0.66, antiderivative size = 330, normalized size of antiderivative = 0.78, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2g^3i^2(a+bx)^6\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{6b^3}+\frac{g^3i^2(a+bx)^4(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4b^3}+\frac{2dg^3i^2(a+bx)^5(bc-ad)}{5b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] -(B*(b*c - a*d)^5*g^3*i^2*x)/(60*b^2*d^3) + (B*(b*c - a*d)^4*g^3*i^2*(a + b
*x)^2)/(120*b^3*d^2) - (B*(b*c - a*d)^3*g^3*i^2*(a + b*x)^3)/(180*b^3*d) -
(7*B*(b*c - a*d)^2*g^3*i^2*(a + b*x)^4)/(120*b^3) - (B*d*(b*c - a*d)*g^3*i^
2*(a + b*x)^5)/(30*b^3) + ((b*c - a*d)^2*g^3*i^2*(a + b*x)^4*(A + B*Log[(e*
(a + b*x))/(c + d*x)]))/(4*b^3) + (2*d*(b*c - a*d)*g^3*i^2*(a + b*x)^5*(A +
 B*Log[(e*(a + b*x))/(c + d*x)]))/(5*b^3) + (d^2*g^3*i^2*(a + b*x)^6*(A + B
*Log[(e*(a + b*x))/(c + d*x)]))/(6*b^3) + (B*(b*c - a*d)^6*g^3*i^2*Log[c +
d*x])/(60*b^3*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (10c+10dx)^2(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx = \int\left(\frac{100(bc-ad)^2(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2}+\right.$$

$$=\frac{\left(100(bc-ad)^2\right)\int(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{b^2}$$

$$=\frac{25(bc-ad)^2g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3}+\frac{40d(b}{}$$

$$=\frac{25(bc-ad)^2g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3}+\frac{40d(b}{}$$

$$=\frac{25(bc-ad)^2g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3}+\frac{40d(b}{}$$

$$=-\frac{5B(bc-ad)^5g^3x}{3b^2d^3}+\frac{5B(bc-ad)^4g^3(a+bx)^2}{6b^3d^2}-\frac{5B(bc}{}$$

Mathematica [A] time = 0.36, size = 429, normalized size = 1.01

$$\frac{g^3i^2\left(60d^6(a+bx)^6\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+144d^5(a+bx)^5(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+90d^4(a+bx)^4(bc-ad\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x
)]),x]
```

```
[Out] (g^3*i^2*(90*d^4*(b*c - a*d)^2*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*
x)]) + 144*d^5*(b*c - a*d)*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])
 + 60*d^6*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 15*B*(b*c - a*
d)^3*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a +
 b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^2*(12*b*d*(b*c -
 a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3
 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]) - B*(b*c - a*d)*(60*b
*d*(b*c - a*d)^4*x + 30*d^2*(-(b*c) + a*d)^3*(a + b*x)^2 + 20*d^3*(b*c - a*
d)^2*(a + b*x)^3 + 15*d^4*(-(b*c) + a*d)*(a + b*x)^4 + 12*d^5*(a + b*x)^5 -
 60*(b*c - a*d)^5*Log[c + d*x])))/(360*b^3*d^4)
```

fricas [A] time = 1.38, size = 724, normalized size = 1.71

$$\frac{60\,Ab^6d^6g^3i^2x^6+12\left((12\,A-B)b^6cd^5+(18\,A+B)ab^5d^6\right)g^3i^2x^5+3\left((30\,A-7\,B)b^6c^2d^4+6\,(30\,A-B)ab^5cd^5+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="fricas")
```

```
[Out] 1/360*(60*A*b^6*d^6*g^3*i^2*x^6 + 12*((12*A - B)*b^6*c*d^5 + (18*A + B)*a*b
^5*d^6)*g^3*i^2*x^5 + 3*((30*A - 7*B)*b^6*c^2*d^4 + 6*(30*A - B)*a*b^5*c*d^
5 + (90*A + 13*B)*a^2*b^4*d^6)*g^3*i^2*x^4 - 2*(B*b^6*c^3*d^3 - 3*(60*A - 1
3*B)*a*b^5*c^2*d^4 - 3*(120*A + 7*B)*a^2*b^4*c*d^5 - (60*A + 19*B)*a^3*b^3*
d^6)*g^3*i^2*x^3 + 3*(B*b^6*c^4*d^2 - 6*B*a*b^5*c^3*d^3 + 30*(6*A - B)*a^2*
b^4*c^2*d^4 + 2*(60*A + 17*B)*a^3*b^3*c*d^5 + B*a^4*b^2*d^6)*g^3*i^2*x^2 -
6*(B*b^6*c^5*d - 6*B*a*b^5*c^4*d^2 + 15*B*a^2*b^4*c^3*d^3 - 5*(12*A + B)*a^
3*b^3*c^2*d^4 - 6*B*a^4*b^2*c*d^5 + B*a^5*b*d^6)*g^3*i^2*x + 6*(15*B*a^4*b^
2*c^2*d^4 - 6*B*a^5*b*c*d^5 + B*a^6*d^6)*g^3*i^2*log(b*x + a) + 6*(B*b^6*c^
6 - 6*B*a*b^5*c^5*d + 15*B*a^2*b^4*c^4*d^2 - 20*B*a^3*b^3*c^3*d^3)*g^3*i^2*
log(d*x + c) + 6*(10*B*b^6*d^6*g^3*i^2*x^6 + 60*B*a^3*b^3*c^2*d^4*g^3*i^2*x
 + 12*(2*B*b^6*c*d^5 + 3*B*a*b^5*d^6)*g^3*i^2*x^5 + 15*(B*b^6*c^2*d^4 + 6*B
*a*b^5*c*d^5 + 3*B*a^2*b^4*d^6)*g^3*i^2*x^4 + 20*(3*B*a*b^5*c^2*d^4 + 6*B*a
^2*b^4*c*d^5 + B*a^3*b^3*d^6)*g^3*i^2*x^3 + 30*(3*B*a^2*b^4*c^2*d^4 + 2*B*a
^3*b^3*c*d^5)*g^3*i^2*x^2)*log((b*e*x + a*e)/(d*x + c)))/(b^3*d^4)
```

giac [B] time = 1.82, size = 7651, normalized size = 18.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="giac")
```

```
[Out] 1/360*(6*B*b^13*c^7*g^3*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 42*B*a*
b^12*c^6*d*g^3*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 126*B*a^2*b^11*c
^5*d^2*g^3*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 210*B*a^3*b^10*c^4*d
^3*g^3*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 210*B*a^4*b^9*c^3*d^4*g^
3*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 126*B*a^5*b^8*c^2*d^5*g^3*e^7
*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 42*B*a^6*b^7*c*d^6*g^3*e^7*log(-b*
e + (b*x*e + a*e)*d/(d*x + c)) - 6*B*a^7*b^6*d^7*g^3*e^7*log(-b*e + (b*x*e
+ a*e)*d/(d*x + c)) - 36*(b*x*e + a*e)*B*b^12*c^7*d*g^3*e^6*log(-b*e + (b*x
*e + a*e)*d/(d*x + c))/(d*x + c) + 252*(b*x*e + a*e)*B*a*b^11*c^6*d^2*g^3*e
^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 756*(b*x*e + a*e)*B*a^
2*b^10*c^5*d^3*g^3*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 12
60*(b*x*e + a*e)*B*a^3*b^9*c^4*d^4*g^3*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x
+ c))/(d*x + c) - 1260*(b*x*e + a*e)*B*a^4*b^8*c^3*d^5*g^3*e^6*log(-b*e + (
b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 756*(b*x*e + a*e)*B*a^5*b^7*c^2*d^6*g
^3*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 252*(b*x*e + a*e)*
B*a^6*b^6*c*d^7*g^3*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 3
6*(b*x*e + a*e)*B*a^7*b^5*d^8*g^3*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))
/(d*x + c) + 90*(b*x*e + a*e)^2*B*b^11*c^7*d^2*g^3*e^5*log(-b*e + (b*x*e +
a*e)*d/(d*x + c))/(d*x + c)^2 - 630*(b*x*e + a*e)^2*B*a*b^10*c^6*d^3*g^3*e^
5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 1890*(b*x*e + a*e)^2*
B*a^2*b^9*c^5*d^4*g^3*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2
 - 3150*(b*x*e + a*e)^2*B*a^3*b^8*c^4*d^5*g^3*e^5*log(-b*e + (b*x*e + a*e)*
d/(d*x + c))/(d*x + c)^2 + 3150*(b*x*e + a*e)^2*B*a^4*b^7*c^3*d^6*g^3*e^5*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 1890*(b*x*e + a*e)^2*B*a
^5*b^6*c^2*d^7*g^3*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 +
630*(b*x*e + a*e)^2*B*a^6*b^5*c*d^8*g^3*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x
 + c))/(d*x + c)^2 - 90*(b*x*e + a*e)^2*B*a^7*b^4*d^9*g^3*e^5*log(-b*e + (b
*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 120*(b*x*e + a*e)^3*B*b^10*c^7*d^3*g
^3*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 840*(b*x*e + a*e
)^3*B*a*b^9*c^6*d^4*g^3*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)
^3 - 2520*(b*x*e + a*e)^3*B*a^2*b^8*c^5*d^5*g^3*e^4*log(-b*e + (b*x*e + a*e
)*d/(d*x + c))/(d*x + c)^3 + 4200*(b*x*e + a*e)^3*B*a^3*b^7*c^4*d^6*g^3*e^4
*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 4200*(b*x*e + a*e)^3*B
*a^4*b^6*c^3*d^7*g^3*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3
+ 2520*(b*x*e + a*e)^3*B*a^5*b^5*c^2*d^8*g^3*e^4*log(-b*e + (b*x*e + a*e)*d
/(d*x + c))/(d*x + c)^3 - 840*(b*x*e + a*e)^3*B*a^6*b^4*c*d^9*g^3*e^4*log(-
```

b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 120*(b*x*e + a*e)^3*B*a^7*b^
3*d^10*g^3*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 90*(b*x*
e + a*e)^4*B*b^9*c^7*d^4*g^3*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x
 + c)^4 - 630*(b*x*e + a*e)^4*B*a*b^8*c^6*d^5*g^3*e^3*log(-b*e + (b*x*e + a
*e)*d/(d*x + c))/(d*x + c)^4 + 1890*(b*x*e + a*e)^4*B*a^2*b^7*c^5*d^6*g^3*e
^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 3150*(b*x*e + a*e)^4
*B*a^3*b^6*c^4*d^7*g^3*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^
4 + 3150*(b*x*e + a*e)^4*B*a^4*b^5*c^3*d^8*g^3*e^3*log(-b*e + (b*x*e + a*e)
*d/(d*x + c))/(d*x + c)^4 - 1890*(b*x*e + a*e)^4*B*a^5*b^4*c^2*d^9*g^3*e^3*
log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 630*(b*x*e + a*e)^4*B*a
^6*b^3*c*d^10*g^3*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 9
0*(b*x*e + a*e)^4*B*a^7*b^2*d^11*g^3*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x +
c))/(d*x + c)^4 - 36*(b*x*e + a*e)^5*B*b^8*c^7*d^5*g^3*e^2*log(-b*e + (b*x*
e + a*e)*d/(d*x + c))/(d*x + c)^5 + 252*(b*x*e + a*e)^5*B*a*b^7*c^6*d^6*g^3
*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 756*(b*x*e + a*e)^
5*B*a^2*b^6*c^5*d^7*g^3*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)
^5 + 1260*(b*x*e + a*e)^5*B*a^3*b^5*c^4*d^8*g^3*e^2*log(-b*e + (b*x*e + a*e
)*d/(d*x + c))/(d*x + c)^5 - 1260*(b*x*e + a*e)^5*B*a^4*b^4*c^3*d^9*g^3*e^2
*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 756*(b*x*e + a*e)^5*B*
a^5*b^3*c^2*d^10*g^3*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5
 - 252*(b*x*e + a*e)^5*B*a^6*b^2*c*d^11*g^3*e^2*log(-b*e + (b*x*e + a*e)*d/(
d*x + c))/(d*x + c)^5 + 36*(b*x*e + a*e)^5*B*a^7*b*d^12*g^3*e^2*log(-b*e +
(b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 6*(b*x*e + a*e)^6*B*b^7*c^7*d^6*g^
3*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 - 42*(b*x*e + a*e)^6*
B*a*b^6*c^6*d^7*g^3*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 + 1
26*(b*x*e + a*e)^6*B*a^2*b^5*c^5*d^8*g^3*e*log(-b*e + (b*x*e + a*e)*d/(d*x
 + c))/(d*x + c)^6 - 210*(b*x*e + a*e)^6*B*a^3*b^4*c^4*d^9*g^3*e*log(-b*e +
(b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 + 210*(b*x*e + a*e)^6*B*a^4*b^3*c^3*
d^10*g^3*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 - 126*(b*x*e +
 a*e)^6*B*a^5*b^2*c^2*d^11*g^3*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x
 + c)^6 + 42*(b*x*e + a*e)^6*B*a^6*b*c*d^12*g^3*e*log(-b*e + (b*x*e + a*e)*
d/(d*x + c))/(d*x + c)^6 - 6*(b*x*e + a*e)^6*B*a^7*d^13*g^3*e*log(-b*e + (b
*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 - 90*(b*x*e + a*e)^4*B*b^9*c^7*d^4*g^3
*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 630*(b*x*e + a*e)^4*B*a*b^8
*c^6*d^5*g^3*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 1890*(b*x*e + a
*e)^4*B*a^2*b^7*c^5*d^6*g^3*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 +
3150*(b*x*e + a*e)^4*B*a^3*b^6*c^4*d^7*g^3*e^3*log((b*x*e + a*e)/(d*x + c))
/(d*x + c)^4 - 3150*(b*x*e + a*e)^4*B*a^4*b^5*c^3*d^8*g^3*e^3*log((b*x*e +
a*e)/(d*x + c))/(d*x + c)^4 + 1890*(b*x*e + a*e)^4*B*a^5*b^4*c^2*d^9*g^3*e^
3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 630*(b*x*e + a*e)^4*B*a^6*b^3*
c*d^10*g^3*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 90*(b*x*e + a*e)^
4*B*a^7*b^2*d^11*g^3*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 36*(b*x
*e + a*e)^5*B*b^8*c^7*d^5*g^3*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5
 - 252*(b*x*e + a*e)^5*B*a*b^7*c^6*d^6*g^3*e^2*log((b*x*e + a*e)/(d*x + c))/
(d*x + c)^5 + 756*(b*x*e + a*e)^5*B*a^2*b^6*c^5*d^7*g^3*e^2*log((b*x*e + a*
e)/(d*x + c))/(d*x + c)^5 - 1260*(b*x*e + a*e)^5*B*a^3*b^5*c^4*d^8*g^3*e^2*
log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 1260*(b*x*e + a*e)^5*B*a^4*b^4*c
^3*d^9*g^3*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 756*(b*x*e + a*e)
^5*B*a^5*b^3*c^2*d^10*g^3*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 25
2*(b*x*e + a*e)^5*B*a^6*b^2*c*d^11*g^3*e^2*log((b*x*e + a*e)/(d*x + c))/(d*
x + c)^5 - 36*(b*x*e + a*e)^5*B*a^7*b*d^12*g^3*e^2*log((b*x*e + a*e)/(d*x +
 c))/(d*x + c)^5 - 6*(b*x*e + a*e)^6*B*b^7*c^7*d^6*g^3*e*log((b*x*e + a*e)/
(d*x + c))/(d*x + c)^6 + 42*(b*x*e + a*e)^6*B*a*b^6*c^6*d^7*g^3*e*log((b*x*
e + a*e)/(d*x + c))/(d*x + c)^6 - 126*(b*x*e + a*e)^6*B*a^2*b^5*c^5*d^8*g^3
*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 210*(b*x*e + a*e)^6*B*a^3*b^4
*c^4*d^9*g^3*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 - 210*(b*x*e + a*e)
^6*B*a^4*b^3*c^3*d^10*g^3*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 126*
(b*x*e + a*e)^6*B*a^5*b^2*c^2*d^11*g^3*e*log((b*x*e + a*e)/(d*x + c))/(d*x
+ c)^6 - 42*(b*x*e + a*e)^6*B*a^6*b*c*d^12*g^3*e*log((b*x*e + a*e)/(d*x + c

```
))/(d*x + c)^6 + 6*(b*x*e + a*e)^6*B*a^7*d^13*g^3*e*log((b*x*e + a*e)/(d*x
+ c))/(d*x + c)^6 + 6*A*b^13*c^7*g^3*e^7 + 2*B*b^13*c^7*g^3*e^7 - 42*A*a*b^
12*c^6*d*g^3*e^7 - 14*B*a*b^12*c^6*d*g^3*e^7 + 126*A*a^2*b^11*c^5*d^2*g^3*e
^7 + 42*B*a^2*b^11*c^5*d^2*g^3*e^7 - 210*A*a^3*b^10*c^4*d^3*g^3*e^7 - 70*B*
a^3*b^10*c^4*d^3*g^3*e^7 + 210*A*a^4*b^9*c^3*d^4*g^3*e^7 + 70*B*a^4*b^9*c^3
*d^4*g^3*e^7 - 126*A*a^5*b^8*c^2*d^5*g^3*e^7 - 42*B*a^5*b^8*c^2*d^5*g^3*e^7
 + 42*A*a^6*b^7*c*d^6*g^3*e^7 + 14*B*a^6*b^7*c*d^6*g^3*e^7 - 6*A*a^7*b^6*d^
7*g^3*e^7 - 2*B*a^7*b^6*d^7*g^3*e^7 - 36*(b*x*e + a*e)*A*b^12*c^7*d*g^3*e^6
/(d*x + c) - 6*(b*x*e + a*e)*B*b^12*c^7*d*g^3*e^6/(d*x + c) + 252*(b*x*e +
a*e)*A*a*b^11*c^6*d^2*g^3*e^6/(d*x + c) + 42*(b*x*e + a*e)*B*a*b^11*c^6*d^2
*g^3*e^6/(d*x + c) - 756*(b*x*e + a*e)*A*a^2*b^10*c^5*d^3*g^3*e^6/(d*x + c)
 - 126*(b*x*e + a*e)*B*a^2*b^10*c^5*d^3*g^3*e^6/(d*x + c) + 1260*(b*x*e + a
*e)*A*a^3*b^9*c^4*d^4*g^3*e^6/(d*x + c) + 210*(b*x*e + a*e)*B*a^3*b^9*c^4*d
^4*g^3*e^6/(d*x + c) - 1260*(b*x*e + a*e)*A*a^4*b^8*c^3*d^5*g^3*e^6/(d*x +
c) - 210*(b*x*e + a*e)*B*a^4*b^8*c^3*d^5*g^3*e^6/(d*x + c) + 756*(b*x*e + a
*e)*A*a^5*b^7*c^2*d^6*g^3*e^6/(d*x + c) + 126*(b*x*e + a*e)*B*a^5*b^7*c^2*d
^6*g^3*e^6/(d*x + c) - 252*(b*x*e + a*e)*A*a^6*b^6*c*d^7*g^3*e^6/(d*x + c)
- 42*(b*x*e + a*e)*B*a^6*b^6*c*d^7*g^3*e^6/(d*x + c) + 36*(b*x*e + a*e)*A*a
^7*b^5*d^8*g^3*e^6/(d*x + c) + 6*(b*x*e + a*e)*B*a^7*b^5*d^8*g^3*e^6/(d*x +
 c) + 90*(b*x*e + a*e)^2*A*b^11*c^7*d^2*g^3*e^5/(d*x + c)^2 - 3*(b*x*e + a*
e)^2*B*b^11*c^7*d^2*g^3*e^5/(d*x + c)^2 - 630*(b*x*e + a*e)^2*A*a*b^10*c^6*
d^3*g^3*e^5/(d*x + c)^2 + 21*(b*x*e + a*e)^2*B*a*b^10*c^6*d^3*g^3*e^5/(d*x
+ c)^2 + 1890*(b*x*e + a*e)^2*A*a^2*b^9*c^5*d^4*g^3*e^5/(d*x + c)^2 - 63*(b
*x*e + a*e)^2*B*a^2*b^9*c^5*d^4*g^3*e^5/(d*x + c)^2 - 3150*(b*x*e + a*e)^2*
A*a^3*b^8*c^4*d^5*g^3*e^5/(d*x + c)^2 + 105*(b*x*e + a*e)^2*B*a^3*b^8*c^4*d
^5*g^3*e^5/(d*x + c)^2 + 3150*(b*x*e + a*e)^2*A*a^4*b^7*c^3*d^6*g^3*e^5/(d*
x + c)^2 - 105*(b*x*e + a*e)^2*B*a^4*b^7*c^3*d^6*g^3*e^5/(d*x + c)^2 - 1890
*(b*x*e + a*e)^2*A*a^5*b^6*c^2*d^7*g^3*e^5/(d*x + c)^2 + 63*(b*x*e + a*e)^2
*B*a^5*b^6*c^2*d^7*g^3*e^5/(d*x + c)^2 + 630*(b*x*e + a*e)^2*A*a^6*b^5*c*d^
8*g^3*e^5/(d*x + c)^2 - 21*(b*x*e + a*e)^2*B*a^6*b^5*c*d^8*g^3*e^5/(d*x + c
)^2 - 90*(b*x*e + a*e)^2*A*a^7*b^4*d^9*g^3*e^5/(d*x + c)^2 + 3*(b*x*e + a*e
)^2*B*a^7*b^4*d^9*g^3*e^5/(d*x + c)^2 - 120*(b*x*e + a*e)^3*A*b^10*c^7*d^3*
g^3*e^4/(d*x + c)^3 + 34*(b*x*e + a*e)^3*B*b^10*c^7*d^3*g^3*e^4/(d*x + c)^3
 + 840*(b*x*e + a*e)^3*A*a*b^9*c^6*d^4*g^3*e^4/(d*x + c)^3 - 238*(b*x*e + a
*e)^3*B*a*b^9*c^6*d^4*g^3*e^4/(d*x + c)^3 - 2520*(b*x*e + a*e)^3*A*a^2*b^8*
c^5*d^5*g^3*e^4/(d*x + c)^3 + 714*(b*x*e + a*e)^3*B*a^2*b^8*c^5*d^5*g^3*e^4
/(d*x + c)^3 + 4200*(b*x*e + a*e)^3*A*a^3*b^7*c^4*d^6*g^3*e^4/(d*x + c)^3 -
 1190*(b*x*e + a*e)^3*B*a^3*b^7*c^4*d^6*g^3*e^4/(d*x + c)^3 - 4200*(b*x*e +
 a*e)^3*A*a^4*b^6*c^3*d^7*g^3*e^4/(d*x + c)^3 + 1190*(b*x*e + a*e)^3*B*a^4*
b^6*c^3*d^7*g^3*e^4/(d*x + c)^3 + 2520*(b*x*e + a*e)^3*A*a^5*b^5*c^2*d^8*g^
3*e^4/(d*x + c)^3 - 714*(b*x*e + a*e)^3*B*a^5*b^5*c^2*d^8*g^3*e^4/(d*x + c)
^3 - 840*(b*x*e + a*e)^3*A*a^6*b^4*c*d^9*g^3*e^4/(d*x + c)^3 + 238*(b*x*e +
 a*e)^3*B*a^6*b^4*c*d^9*g^3*e^4/(d*x + c)^3 + 120*(b*x*e + a*e)^3*A*a^7*b^3
*d^10*g^3*e^4/(d*x + c)^3 - 34*(b*x*e + a*e)^3*B*a^7*b^3*d^10*g^3*e^4/(d*x
+ c)^3 - 33*(b*x*e + a*e)^4*B*b^9*c^7*d^4*g^3*e^3/(d*x + c)^4 + 231*(b*x*e
+ a*e)^4*B*a*b^8*c^6*d^5*g^3*e^3/(d*x + c)^4 - 693*(b*x*e + a*e)^4*B*a^2*b^
7*c^5*d^6*g^3*e^3/(d*x + c)^4 + 1155*(b*x*e + a*e)^4*B*a^3*b^6*c^4*d^7*g^3*
e^3/(d*x + c)^4 - 1155*(b*x*e + a*e)^4*B*a^4*b^5*c^3*d^8*g^3*e^3/(d*x + c)^
4 + 693*(b*x*e + a*e)^4*B*a^5*b^4*c^2*d^9*g^3*e^3/(d*x + c)^4 - 231*(b*x*e
+ a*e)^4*B*a^6*b^3*c*d^10*g^3*e^3/(d*x + c)^4 + 33*(b*x*e + a*e)^4*B*a^7*b^
2*d^11*g^3*e^3/(d*x + c)^4 + 6*(b*x*e + a*e)^5*B*b^8*c^7*d^5*g^3*e^2/(d*x +
 c)^5 - 42*(b*x*e + a*e)^5*B*a*b^7*c^6*d^6*g^3*e^2/(d*x + c)^5 + 126*(b*x*e
 + a*e)^5*B*a^2*b^6*c^5*d^7*g^3*e^2/(d*x + c)^5 - 210*(b*x*e + a*e)^5*B*a^3
*b^5*c^4*d^8*g^3*e^2/(d*x + c)^5 + 210*(b*x*e + a*e)^5*B*a^4*b^4*c^3*d^9*g^
3*e^2/(d*x + c)^5 - 126*(b*x*e + a*e)^5*B*a^5*b^3*c^2*d^10*g^3*e^2/(d*x + c
)^5 + 42*(b*x*e + a*e)^5*B*a^6*b^2*c*d^11*g^3*e^2/(d*x + c)^5 - 6*(b*x*e +
a*e)^5*B*a^7*b*d^12*g^3*e^2/(d*x + c)^5)*(b*c/((b*c*e - a*d*e)*(b*c - a*d))
 - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^9*d^4*e^6 - 6*(b*x*e + a*e)*b^8*d^
5*e^5/(d*x + c) + 15*(b*x*e + a*e)^2*b^7*d^6*e^4/(d*x + c)^2 - 20*(b*x*e +
```

```
a*e)^3*b^6*d^7*e^3/(d*x + c)^3 + 15*(b*x*e + a*e)^4*b^5*d^8*e^2/(d*x + c)^4
 - 6*(b*x*e + a*e)^5*b^4*d^9*e/(d*x + c)^5 + (b*x*e + a*e)^6*b^3*d^10/(d*x
+ c)^6)
```

maple [B] time = 0.19, size = 9298, normalized size = 21.98

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

```
[Out] result too large to display
```

maxima [B] time = 1.69, size = 1789, normalized size = 4.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="maxima")
```

```
[Out] 1/6*A*b^3*d^2*g^3*i^2*x^6 + 2/5*A*b^3*c*d*g^3*i^2*x^5 + 3/5*A*a*b^2*d^2*g^3
*i^2*x^5 + 1/4*A*b^3*c^2*g^3*i^2*x^4 + 3/2*A*a*b^2*c*d*g^3*i^2*x^4 + 3/4*A*
a^2*b*d^2*g^3*i^2*x^4 + A*a*b^2*c^2*g^3*i^2*x^3 + 2*A*a^2*b*c*d*g^3*i^2*x^3
 + 1/3*A*a^3*d^2*g^3*i^2*x^3 + 3/2*A*a^2*b*c^2*g^3*i^2*x^2 + A*a^3*c*d*g^3*
i^2*x^2 + (x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*lo
g(d*x + c)/d)*B*a^3*c^2*g^3*i^2 + 3/2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x +
 c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B
*a^2*b*c^2*g^3*i^2 + 1/2*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^
3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*
(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a*b^2*c^2*g^3*i^2 + 1/24*(6*x^4*log(b*e
*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)
/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(
b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*b^3*c^2*g^3*i^2 + (x^2*log(b*e*x/(d*x +
c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c -
a*d)*x/(b*d))*B*a^3*c*d*g^3*i^2 + (2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c
)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)
*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a^2*b*c*d*g^3*i^2 + 1/4*(6*x^4
*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(
d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x
^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a*b^2*c*d*g^3*i^2 + 1/30*(12*x^5
*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^5*lo
g(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*
d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d
^4))*B*b^3*c*d*g^3*i^2 + 1/6*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) +
2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2
- 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a^3*d^2*g^3*i^2 + 1/8*(6*x^4*log(b*
e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c
)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*
(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a^2*b*d^2*g^3*i^2 + 1/20*(12*x^5*log(b*
e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x +
 c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^
3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*B*
a*b^2*d^2*g^3*i^2 + 1/360*(60*x^6*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 60
*a^6*log(b*x + a)/b^6 + 60*c^6*log(d*x + c)/d^6 - (12*(b^5*c*d^4 - a*b^4*d^
5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5
)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5
))*B*b^3*d^2*g^3*i^2 + A*a^3*c^2*g^3*i^2*x
```

mupad [B] time = 5.89, size = 2473, normalized size = 5.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] x^3*((g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3 - B*b^3*c^3 + 48*A*
a*b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(12*d)
 + ((60*a*d + 60*b*c)*((((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*
c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d)
 - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 60
*A*a*b*c*d - B*a*b*c*d))/5 + A*a*b^2*c*d*g^3*i^2))/(180*b*d) - (a*c*((b^2*d
*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*
d + 60*b*c))/60))/(3*b*d)) - x^4*((((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B
*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c
))/(240*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*
b^2*c^2 + 60*A*a*b*c*d - B*a*b*c*d))/20 + (A*a*b^2*c*d*g^3*i^2)/4) + x^2*((
a*c*((((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g
^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i^2*(30*
A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 60*A*a*b*c*d - B*a*b
*c*d))/5 + A*a*b^2*c*d*g^3*i^2))/(2*b*d) - ((60*a*d + 60*b*c)*((g^3*i^2*(16
*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3 - B*b^3*c^3 + 48*A*a*b^2*c^2*d + 72*
A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(4*d) + ((60*a*d + 60*b
*c)*((((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g
^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i^2*(30*
A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 60*A*a*b*c*d - B*a*b
*c*d))/5 + A*a*b^2*c*d*g^3*i^2))/(60*b*d) - (a*c*((b^2*d*g^3*i^2*(24*A*a*d
 + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60))/(
b*d)))/(120*b*d) + (a*g^3*i^2*(3*A*a^3*d^3 + 12*A*b^3*c^3 + B*a^3*d^3 - 3*B
*b^3*c^3 + 54*A*a*b^2*c^2*d + 36*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d + 5*B*a^2*
b*c*d^2))/(6*b*d)) + log((e*(a + b*x))/(c + d*x))*(B*a^3*c^2*g^3*i^2*x + (B
*a*g^3*i^2*x^3*(a^2*d^2 + 3*b^2*c^2 + 6*a*b*c*d))/3 + (B*b*g^3*i^2*x^4*(3*a
^2*d^2 + b^2*c^2 + 6*a*b*c*d))/4 + (B*b^3*d^2*g^3*i^2*x^6)/6 + (B*a^2*c*g^3
*i^2*x^2*(2*a*d + 3*b*c))/2 + (B*b^2*d*g^3*i^2*x^5*(3*a*d + 2*b*c))/5) + x^
5*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/30 - (A*b^2*d*g^3*
i^2*(60*a*d + 60*b*c))/300) - x*(((60*a*d + 60*b*c)*((a*c*((((b^2*d*g^3*i^2
*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b
*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*
c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 60*A*a*b*c*d - B*a*b*c*d))/5 + A*a*b^2*c*
d*g^3*i^2))/(b*d) - ((60*a*d + 60*b*c)*((g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^
3 + 3*B*a^3*d^3 - B*b^3*c^3 + 48*A*a*b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b
^2*c^2*d + 3*B*a^2*b*c*d^2))/(4*d) + ((60*a*d + 60*b*c)*((((b^2*d*g^3*i^2*(
24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c
))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^
2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 60*A*a*b*c*d - B*a*b*c*d))/5 + A*a*b^2*c*d*
g^3*i^2))/(60*b*d) - (a*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*
b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60))/(b*d)))/(60*b*d) + (a*g^
3*i^2*(3*A*a^3*d^3 + 12*A*b^3*c^3 + B*a^3*d^3 - 3*B*b^3*c^3 + 54*A*a*b^2*c^
2*d + 36*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d + 5*B*a^2*b*c*d^2))/(3*b*d)))/(60*
b*d) + (a*c*((g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3 - B*b^3*c^3
 + 48*A*a*b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2)
)/(4*d) + ((60*a*d + 60*b*c)*((((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d
 - B*b*c))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(
60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c
^2 + 60*A*a*b*c*d - B*a*b*c*d))/5 + A*a*b^2*c*d*g^3*i^2))/(60*b*d) - (a*c*(
(b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d - B*b*c))/6 - (A*b^2*d*g^3*i^2*
(60*a*d + 60*b*c))/60))/(b*d)))/(b*d) - (a^2*c*g^3*i^2*(6*A*a^2*d^2 + 12*A*
b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 24*A*a*b*c*d + B*a*b*c*d))/(2*b*d)) +
 (log(a + b*x)*(B*a^6*d^2*g^3*i^2 + 15*B*a^4*b^2*c^2*g^3*i^2 - 6*B*a^5*b*c*
d*g^3*i^2))/(60*b^3) + (log(c + d*x)*(B*b^3*c^6*g^3*i^2 - 20*B*a^3*c^3*d^3*
g^3*i^2 - 6*B*a*b^2*c^5*d*g^3*i^2 + 15*B*a^2*b*c^4*d^2*g^3*i^2))/(60*d^4) +
 (A*b^3*d^2*g^3*i^2*x^6)/6
```

sympy [B] time = 13.45, size = 1727, normalized size = 4.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*b**3*d**2*g**3*i**2*x**6/6 + B*a**4*g**3*i**2*(a**2*d**2 - 6*a*b*c*d + 15
*b**2*c**2)*log(x + (B*a**6*c*d**5*g**3*i**2 - 6*B*a**5*b*c**2*d**4*g**3*i*
*2 + B*a**5*d**4*g**3*i**2*(a**2*d**2 - 6*a*b*c*d + 15*b**2*c**2)/b + 35*B*
a**4*b**2*c**3*d**3*g**3*i**2 - B*a**4*c*d**3*g**3*i**2*(a**2*d**2 - 6*a*b*
c*d + 15*b**2*c**2) - 15*B*a**3*b**3*c**4*d**2*g**3*i**2 + 6*B*a**2*b**4*c*
*5*d*g**3*i**2 - B*a*b**5*c**6*g**3*i**2)/(B*a**6*d**6*g**3*i**2 - 6*B*a**5
*b*c*d**5*g**3*i**2 + 15*B*a**4*b**2*c**2*d**4*g**3*i**2 + 20*B*a**3*b**3*c
**3*d**3*g**3*i**2 - 15*B*a**2*b**4*c**4*d**2*g**3*i**2 + 6*B*a*b**5*c**5*d
*g**3*i**2 - B*b**6*c**6*g**3*i**2))/(60*b**3) - B*c**3*g**3*i**2*(20*a**3*
d**3 - 15*a**2*b*c*d**2 + 6*a*b**2*c**2*d - b**3*c**3)*log(x + (B*a**6*c*d*
*5*g**3*i**2 - 6*B*a**5*b*c**2*d**4*g**3*i**2 + 35*B*a**4*b**2*c**3*d**3*g*
*3*i**2 - 15*B*a**3*b**3*c**4*d**2*g**3*i**2 + 6*B*a**2*b**4*c**5*d*g**3*i*
*2 - B*a*b**5*c**6*g**3*i**2 - B*a*b**2*c**3*g**3*i**2*(20*a**3*d**3 - 15*a
**2*b*c*d**2 + 6*a*b**2*c**2*d - b**3*c**3) + B*b**3*c**4*g**3*i**2*(20*a**
3*d**3 - 15*a**2*b*c*d**2 + 6*a*b**2*c**2*d - b**3*c**3)/d)/(B*a**6*d**6*g*
*3*i**2 - 6*B*a**5*b*c*d**5*g**3*i**2 + 15*B*a**4*b**2*c**2*d**4*g**3*i**2
+ 20*B*a**3*b**3*c**3*d**3*g**3*i**2 - 15*B*a**2*b**4*c**4*d**2*g**3*i**2 +
 6*B*a*b**5*c**5*d*g**3*i**2 - B*b**6*c**6*g**3*i**2))/(60*d**4) + x**5*(3*
A*a*b**2*d**2*g**3*i**2/5 + 2*A*b**3*c*d*g**3*i**2/5 + B*a*b**2*d**2*g**3*i
**2/30 - B*b**3*c*d*g**3*i**2/30) + x**4*(3*A*a**2*b*d**2*g**3*i**2/4 + 3*A
*a*b**2*c*d*g**3*i**2/2 + A*b**3*c**2*g**3*i**2/4 + 13*B*a**2*b*d**2*g**3*i
**2/120 - B*a*b**2*c*d*g**3*i**2/20 - 7*B*b**3*c**2*g**3*i**2/120) + x**3*(
A*a**3*d**2*g**3*i**2/3 + 2*A*a**2*b*c*d*g**3*i**2 + A*a*b**2*c**2*g**3*i**
2 + 19*B*a**3*d**2*g**3*i**2/180 + 7*B*a**2*b*c*d*g**3*i**2/60 - 13*B*a*b**
2*c**2*g**3*i**2/60 - B*b**3*c**3*g**3*i**2/(180*d)) + x**2*(A*a**3*c*d*g**
3*i**2 + 3*A*a**2*b*c**2*g**3*i**2/2 + B*a**4*d**2*g**3*i**2/(120*b) + 17*B
*a**3*c*d*g**3*i**2/60 - B*a**2*b*c**2*g**3*i**2/4 - B*a*b**2*c**3*g**3*i**
2/(20*d) + B*b**3*c**4*g**3*i**2/(120*d**2)) + x*(A*a**3*c**2*g**3*i**2 - B
*a**5*d**2*g**3*i**2/(60*b**2) + B*a**4*c*d*g**3*i**2/(10*b) + B*a**3*c**2*
g**3*i**2/12 - B*a**2*b*c**3*g**3*i**2/(4*d) + B*a*b**2*c**4*g**3*i**2/(10*
d**2) - B*b**3*c**5*g**3*i**2/(60*d**3)) + (B*a**3*c**2*g**3*i**2*x + B*a**
3*c*d*g**3*i**2*x**2 + B*a**3*d**2*g**3*i**2*x**3/3 + 3*B*a**2*b*c**2*g**3*
i**2*x**2/2 + 2*B*a**2*b*c*d*g**3*i**2*x**3 + 3*B*a**2*b*d**2*g**3*i**2*x**
4/4 + B*a*b**2*c**2*g**3*i**2*x**3 + 3*B*a*b**2*c*d*g**3*i**2*x**4/2 + 3*B*
a*b**2*d**2*g**3*i**2*x**5/5 + B*b**3*c**2*g**3*i**2*x**4/4 + 2*B*b**3*c*d*
g**3*i**2*x**5/5 + B*b**3*d**2*g**3*i**2*x**6/6)*log(e*(a + b*x)/(c + d*x))
```

3.11 $\int (ag+bgx)^2(ci+dix)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right) dx$

Optimal. Leaf size=337

$$\frac{b^2g^2i^2(c+dx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5d^3}+\frac{g^2i^2(c+dx)^3(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3d^3}-\frac{bg^2i^2(c+dx)^4(bc-ad)\left(\right.}{2d^3}$$

```
[Out] -1/30*B*(-a*d+b*c)^4*g^2*i^2*x/b^2/d^2-1/60*B*(-a*d+b*c)^3*g^2*i^2*(d*x+c)^
2/b/d^3+1/10*B*(-a*d+b*c)^2*g^2*i^2*(d*x+c)^3/d^3-1/20*b*B*(-a*d+b*c)*g^2*i
^2*(d*x+c)^4/d^3-1/30*B*(-a*d+b*c)^5*g^2*i^2*ln((b*x+a)/(d*x+c))/b^3/d^3+1/
3*(-a*d+b*c)^2*g^2*i^2*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^3-1/2*b*(-a*
d+b*c)*g^2*i^2*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^3+1/5*b^2*g^2*i^2*(d
*x+c)^5*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^3-1/30*B*(-a*d+b*c)^5*g^2*i^2*ln(d*x+
c)/b^3/d^3
```

Rubi [A] time = 0.51, antiderivative size = 296, normalized size of antiderivative = 0.88, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2g^2i^2(a+bx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5b^3}+\frac{g^2i^2(a+bx)^3(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^3}+\frac{dg^2i^2(a+bx)^4(bc-ad)\left(\right.}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] (B*(b*c - a*d)^4*g^2*i^2*x)/(30*b^2*d^2) - (B*(b*c - a*d)^3*g^2*i^2*(a + b*
x)^2)/(60*b^3*d) - (B*(b*c - a*d)^2*g^2*i^2*(a + b*x)^3)/(10*b^3) - (B*d*(b
*c - a*d)*g^2*i^2*(a + b*x)^4)/(20*b^3) + ((b*c - a*d)^2*g^2*i^2*(a + b*x)^
3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^3) + (d*(b*c - a*d)*g^2*i^2*(a
 + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b^3) + (d^2*g^2*i^2*(a +
 b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(5*b^3) - (B*(b*c - a*d)^5*g^
2*i^2*Log[c + d*x])/(30*b^3*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
```

```
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (11c+11dx)^2(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx=\int\left(\frac{(-bc+ad)^2g^2(11c+11dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^2}\right.$$

$$=\frac{\left(b^2g^2\right)\int(11c+11dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{121d^2}-\frac{(2b(}{}$$

$$=\frac{121(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3d^3}-\frac{121b}{}$$

$$=\frac{121(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3d^3}-\frac{121b}{}$$

$$=\frac{121(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3d^3}-\frac{121b}{}$$

$$=-\frac{121B(bc-ad)^4g^2x}{30b^2d^2}-\frac{121B(bc-ad)^3g^2(c+dx)^2}{60bd^3}+\frac{12}{}$$

Mathematica [A] time = 0.25, size = 362, normalized size = 1.07

$$\frac{g^2i^2\left(12d^5(a+bx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+30d^4(a+bx)^4(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+20d^3(a+bx)^3(bc-ad)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x
)]),x]
```

```
[Out] (g^2*i^2*(20*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*
x)]) + 30*d^4*(b*c - a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])
+ 12*d^5*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 10*B*(b*c - a*d
)^3*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x])
- 5*B*(b*c - a*d)^2*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)
^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + B*(b*c - a*d)*(12*
b*d*(b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(
a + b*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x])))/(60*b^3*d
^3)
```

fricas [A] time = 1.07, size = 534, normalized size = 1.58

$$\frac{12\,Ab^5d^5g^2i^2x^5+3\left((10\,A-B)b^5cd^4+(10\,A+B)ab^4d^5\right)g^2i^2x^4+2\left((10\,A-3\,B)b^5c^2d^3+40\,Aab^4cd^4+(10\,A+3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="fricas")
```

```
[Out] 1/60*(12*A*b^5*d^5*g^2*i^2*x^5 + 3*((10*A - B)*b^5*c*d^4 + (10*A + B)*a*b^4
*d^5)*g^2*i^2*x^4 + 2*((10*A - 3*B)*b^5*c^2*d^3 + 40*A*a*b^4*c*d^4 + (10*A
+ 3*B)*a^2*b^3*d^5)*g^2*i^2*x^3 - (B*b^5*c^3*d^2 - 15*(4*A - B)*a*b^4*c^2*d
```

```
^3 - 15*(4*A + B)*a^2*b^3*c*d^4 - B*a^3*b^2*d^5)*g^2*i^2*x^2 + 2*(B*b^5*c^4
*d - 5*B*a*b^4*c^3*d^2 + 30*A*a^2*b^3*c^2*d^3 + 5*B*a^3*b^2*c*d^4 - B*a^4*b
*d^5)*g^2*i^2*x + 2*(10*B*a^3*b^2*c^2*d^3 - 5*B*a^4*b*c*d^4 + B*a^5*d^5)*g^
2*i^2*log(b*x + a) - 2*(B*b^5*c^5 - 5*B*a*b^4*c^4*d + 10*B*a^2*b^3*c^3*d^2)
*g^2*i^2*log(d*x + c) + 2*(6*B*b^5*d^5*g^2*i^2*x^5 + 30*B*a^2*b^3*c^2*d^3*g
^2*i^2*x + 15*(B*b^5*c*d^4 + B*a*b^4*d^5)*g^2*i^2*x^4 + 10*(B*b^5*c^2*d^3 +
 4*B*a*b^4*c*d^4 + B*a^2*b^3*d^5)*g^2*i^2*x^3 + 30*(B*a*b^4*c^2*d^3 + B*a^2
*b^3*c*d^4)*g^2*i^2*x^2)*log((b*e*x + a*e)/(d*x + c)))/(b^3*d^3)
```

giac [B] time = 1.36, size = 5571, normalized size = 16.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="giac")
```

```
[Out] -1/60*(2*B*b^11*c^6*g^2*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 12*B*a*
b^10*c^5*d*g^2*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 30*B*a^2*b^9*c^4
*d^2*g^2*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 40*B*a^3*b^8*c^3*d^3*g
^2*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 30*B*a^4*b^7*c^2*d^4*g^2*e^6
*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 12*B*a^5*b^6*c*d^5*g^2*e^6*log(-b*
e + (b*x*e + a*e)*d/(d*x + c)) + 2*B*a^6*b^5*d^6*g^2*e^6*log(-b*e + (b*x*e
+ a*e)*d/(d*x + c)) - 10*(b*x*e + a*e)*B*b^10*c^6*d*g^2*e^5*log(-b*e + (b*x
*e + a*e)*d/(d*x + c))/(d*x + c) + 60*(b*x*e + a*e)*B*a*b^9*c^5*d^2*g^2*e^5
*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 150*(b*x*e + a*e)*B*a^2*
b^8*c^4*d^3*g^2*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 200*(
b*x*e + a*e)*B*a^3*b^7*c^3*d^4*g^2*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)
)/(d*x + c) - 150*(b*x*e + a*e)*B*a^4*b^6*c^2*d^5*g^2*e^5*log(-b*e + (b*x*e
 + a*e)*d/(d*x + c))/(d*x + c) + 60*(b*x*e + a*e)*B*a^5*b^5*c*d^6*g^2*e^5*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 10*(b*x*e + a*e)*B*a^6*b^4
*d^7*g^2*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 20*(b*x*e +
a*e)^2*B*b^9*c^6*d^2*g^2*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c
)^2 - 120*(b*x*e + a*e)^2*B*a*b^8*c^5*d^3*g^2*e^4*log(-b*e + (b*x*e + a*e)*
d/(d*x + c))/(d*x + c)^2 + 300*(b*x*e + a*e)^2*B*a^2*b^7*c^4*d^4*g^2*e^4*lo
g(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 400*(b*x*e + a*e)^2*B*a^3
*b^6*c^3*d^5*g^2*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 30
0*(b*x*e + a*e)^2*B*a^4*b^5*c^2*d^6*g^2*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x
 + c))/(d*x + c)^2 - 120*(b*x*e + a*e)^2*B*a^5*b^4*c*d^7*g^2*e^4*log(-b*e +
 (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 20*(b*x*e + a*e)^2*B*a^6*b^3*d^8*
g^2*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 20*(b*x*e + a*e
)^3*B*b^8*c^6*d^3*g^2*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3
 + 120*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g^2*e^3*log(-b*e + (b*x*e + a*e)*d/(
d*x + c))/(d*x + c)^3 - 300*(b*x*e + a*e)^3*B*a^2*b^6*c^4*d^5*g^2*e^3*log(-
b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 400*(b*x*e + a*e)^3*B*a^3*b^
5*c^3*d^6*g^2*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 300*(
b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7*g^2*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x +
c))/(d*x + c)^3 + 120*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g^2*e^3*log(-b*e + (b
*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 20*(b*x*e + a*e)^3*B*a^6*b^2*d^9*g^2
*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 10*(b*x*e + a*e)^4
*B*b^7*c^6*d^4*g^2*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 -
60*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5*g^2*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x
+ c))/(d*x + c)^4 + 150*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g^2*e^2*log(-b*e
+ (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 200*(b*x*e + a*e)^4*B*a^3*b^4*c^
3*d^7*g^2*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 150*(b*x*
e + a*e)^4*B*a^4*b^3*c^2*d^8*g^2*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/
(d*x + c)^4 - 60*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g^2*e^2*log(-b*e + (b*x*e
+ a*e)*d/(d*x + c))/(d*x + c)^4 + 10*(b*x*e + a*e)^4*B*a^6*b*d^10*g^2*e^2*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 2*(b*x*e + a*e)^5*B*b^6*
c^6*d^5*g^2*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 12*(b*x*e
```

```
 + a*e)^5*B*a*b^5*c^5*d^6*g^2*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x
+ c)^5 - 30*(b*x*e + a*e)^5*B*a^2*b^4*c^4*d^7*g^2*e*log(-b*e + (b*x*e + a*e
)*d/(d*x + c))/(d*x + c)^5 + 40*(b*x*e + a*e)^5*B*a^3*b^3*c^3*d^8*g^2*e*log
(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 30*(b*x*e + a*e)^5*B*a^4*b
^2*c^2*d^9*g^2*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 12*(b*
x*e + a*e)^5*B*a^5*b*c*d^10*g^2*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*
x + c)^5 - 2*(b*x*e + a*e)^5*B*a^6*d^11*g^2*e*log(-b*e + (b*x*e + a*e)*d/(d
*x + c))/(d*x + c)^5 + 20*(b*x*e + a*e)^3*B*b^8*c^6*d^3*g^2*e^3*log((b*x*e
+ a*e)/(d*x + c))/(d*x + c)^3 - 120*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g^2*e^3
*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 300*(b*x*e + a*e)^3*B*a^2*b^6*c
^4*d^5*g^2*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 400*(b*x*e + a*e)
^3*B*a^3*b^5*c^3*d^6*g^2*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 300
*(b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7*g^2*e^3*log((b*x*e + a*e)/(d*x + c))/(d*
x + c)^3 - 120*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g^2*e^3*log((b*x*e + a*e)/(d
*x + c))/(d*x + c)^3 + 20*(b*x*e + a*e)^3*B*a^6*b^2*d^9*g^2*e^3*log((b*x*e
+ a*e)/(d*x + c))/(d*x + c)^3 - 10*(b*x*e + a*e)^4*B*b^7*c^6*d^4*g^2*e^2*lo
g((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 60*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5
*g^2*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 150*(b*x*e + a*e)^4*B*a
^2*b^5*c^4*d^6*g^2*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 200*(b*x*
e + a*e)^4*B*a^3*b^4*c^3*d^7*g^2*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)
^4 - 150*(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g^2*e^2*log((b*x*e + a*e)/(d*x +
 c))/(d*x + c)^4 + 60*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g^2*e^2*log((b*x*e +
a*e)/(d*x + c))/(d*x + c)^4 - 10*(b*x*e + a*e)^4*B*a^6*b*d^10*g^2*e^2*log((
b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 2*(b*x*e + a*e)^5*B*b^6*c^6*d^5*g^2*e
*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 12*(b*x*e + a*e)^5*B*a*b^5*c^5*
d^6*g^2*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 30*(b*x*e + a*e)^5*B*a
^2*b^4*c^4*d^7*g^2*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 40*(b*x*e +
 a*e)^5*B*a^3*b^3*c^3*d^8*g^2*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 +
30*(b*x*e + a*e)^5*B*a^4*b^2*c^2*d^9*g^2*e*log((b*x*e + a*e)/(d*x + c))/(d*
x + c)^5 - 12*(b*x*e + a*e)^5*B*a^5*b*c*d^10*g^2*e*log((b*x*e + a*e)/(d*x +
 c))/(d*x + c)^5 + 2*(b*x*e + a*e)^5*B*a^6*d^11*g^2*e*log((b*x*e + a*e)/(d*
x + c))/(d*x + c)^5 + 2*A*b^11*c^6*g^2*e^6 - 12*A*a*b^10*c^5*d*g^2*e^6 + 30
*A*a^2*b^9*c^4*d^2*g^2*e^6 - 40*A*a^3*b^8*c^3*d^3*g^2*e^6 + 30*A*a^4*b^7*c^
2*d^4*g^2*e^6 - 12*A*a^5*b^6*c*d^5*g^2*e^6 + 2*A*a^6*b^5*d^6*g^2*e^6 - 10*(
b*x*e + a*e)*A*b^10*c^6*d*g^2*e^5/(d*x + c) + 2*(b*x*e + a*e)*B*b^10*c^6*d*
g^2*e^5/(d*x + c) + 60*(b*x*e + a*e)*A*a*b^9*c^5*d^2*g^2*e^5/(d*x + c) - 12
*(b*x*e + a*e)*B*a*b^9*c^5*d^2*g^2*e^5/(d*x + c) - 150*(b*x*e + a*e)*A*a^2*
b^8*c^4*d^3*g^2*e^5/(d*x + c) + 30*(b*x*e + a*e)*B*a^2*b^8*c^4*d^3*g^2*e^5/
(d*x + c) + 200*(b*x*e + a*e)*A*a^3*b^7*c^3*d^4*g^2*e^5/(d*x + c) - 40*(b*x
*e + a*e)*B*a^3*b^7*c^3*d^4*g^2*e^5/(d*x + c) - 150*(b*x*e + a*e)*A*a^4*b^6
*c^2*d^5*g^2*e^5/(d*x + c) + 30*(b*x*e + a*e)*B*a^4*b^6*c^2*d^5*g^2*e^5/(d*
x + c) + 60*(b*x*e + a*e)*A*a^5*b^5*c*d^6*g^2*e^5/(d*x + c) - 12*(b*x*e + a
*e)*B*a^5*b^5*c*d^6*g^2*e^5/(d*x + c) - 10*(b*x*e + a*e)*A*a^6*b^4*d^7*g^2*
e^5/(d*x + c) + 2*(b*x*e + a*e)*B*a^6*b^4*d^7*g^2*e^5/(d*x + c) + 20*(b*x*e
 + a*e)^2*A*b^9*c^6*d^2*g^2*e^4/(d*x + c)^2 - 9*(b*x*e + a*e)^2*B*b^9*c^6*d
^2*g^2*e^4/(d*x + c)^2 - 120*(b*x*e + a*e)^2*A*a*b^8*c^5*d^3*g^2*e^4/(d*x +
 c)^2 + 54*(b*x*e + a*e)^2*B*a*b^8*c^5*d^3*g^2*e^4/(d*x + c)^2 + 300*(b*x*e
 + a*e)^2*A*a^2*b^7*c^4*d^4*g^2*e^4/(d*x + c)^2 - 135*(b*x*e + a*e)^2*B*a^2
*b^7*c^4*d^4*g^2*e^4/(d*x + c)^2 - 400*(b*x*e + a*e)^2*A*a^3*b^6*c^3*d^5*g^
2*e^4/(d*x + c)^2 + 180*(b*x*e + a*e)^2*B*a^3*b^6*c^3*d^5*g^2*e^4/(d*x + c)
^2 + 300*(b*x*e + a*e)^2*A*a^4*b^5*c^2*d^6*g^2*e^4/(d*x + c)^2 - 135*(b*x*e
 + a*e)^2*B*a^4*b^5*c^2*d^6*g^2*e^4/(d*x + c)^2 - 120*(b*x*e + a*e)^2*A*a^5
*b^4*c*d^7*g^2*e^4/(d*x + c)^2 + 54*(b*x*e + a*e)^2*B*a^5*b^4*c*d^7*g^2*e^4
/(d*x + c)^2 + 20*(b*x*e + a*e)^2*A*a^6*b^3*d^8*g^2*e^4/(d*x + c)^2 - 9*(b*
x*e + a*e)^2*B*a^6*b^3*d^8*g^2*e^4/(d*x + c)^2 + 9*(b*x*e + a*e)^3*B*b^8*c^
6*d^3*g^2*e^3/(d*x + c)^3 - 54*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g^2*e^3/(d*x
 + c)^3 + 135*(b*x*e + a*e)^3*B*a^2*b^6*c^4*d^5*g^2*e^3/(d*x + c)^3 - 180*(
b*x*e + a*e)^3*B*a^3*b^5*c^3*d^6*g^2*e^3/(d*x + c)^3 + 135*(b*x*e + a*e)^3*
B*a^4*b^4*c^2*d^7*g^2*e^3/(d*x + c)^3 - 54*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*
```

```
g^2*e^3/(d*x + c)^3 + 9*(b*x*e + a*e)^3*B*a^6*b^2*d^9*g^2*e^3/(d*x + c)^3 -
 2*(b*x*e + a*e)^4*B*b^7*c^6*d^4*g^2*e^2/(d*x + c)^4 + 12*(b*x*e + a*e)^4*B
*a*b^6*c^5*d^5*g^2*e^2/(d*x + c)^4 - 30*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g
^2*e^2/(d*x + c)^4 + 40*(b*x*e + a*e)^4*B*a^3*b^4*c^3*d^7*g^2*e^2/(d*x + c)
^4 - 30*(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g^2*e^2/(d*x + c)^4 + 12*(b*x*e +
 a*e)^4*B*a^5*b^2*c*d^9*g^2*e^2/(d*x + c)^4 - 2*(b*x*e + a*e)^4*B*a^6*b*d^1
0*g^2*e^2/(d*x + c)^4)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a
*d*e)*(b*c - a*d)))/(b^8*d^3*e^5 - 5*(b*x*e + a*e)*b^7*d^4*e^4/(d*x + c) +
10*(b*x*e + a*e)^2*b^6*d^5*e^3/(d*x + c)^2 - 10*(b*x*e + a*e)^3*b^5*d^6*e^2
/(d*x + c)^3 + 5*(b*x*e + a*e)^4*b^4*d^7*e/(d*x + c)^4 - (b*x*e + a*e)^5*b^
3*d^8/(d*x + c)^5)
```

maple [B] time = 0.17, size = 6116, normalized size = 18.15

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

```
[Out] result too large to display
```

maxima [B] time = 1.47, size = 1200, normalized size = 3.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="maxima")
```

```
[Out] 1/5*A*b^2*d^2*g^2*i^2*x^5 + 1/2*A*b^2*c*d*g^2*i^2*x^4 + 1/2*A*a*b*d^2*g^2*i
^2*x^4 + 1/3*A*b^2*c^2*g^2*i^2*x^3 + 4/3*A*a*b*c*d*g^2*i^2*x^3 + 1/3*A*a^2*
d^2*g^2*i^2*x^3 + A*a*b*c^2*g^2*i^2*x^2 + A*a^2*c*d*g^2*i^2*x^2 + (x*log(b*
e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*B*a^2
*c^2*g^2*i^2 + (x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)
/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*a*b*c^2*g^2*i^2 + 1/6*
(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^
3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b
^2*d^2))*B*b^2*c^2*g^2*i^2 + (x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^
2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*a^2*c*d*
g^2*i^2 + 2/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x +
 a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 -
a^2*d^2)*x)/(b^2*d^2))*B*a*b*c*d*g^2*i^2 + 1/12*(6*x^4*log(b*e*x/(d*x + c)
+ a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^
3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3
*d^3)*x)/(b^3*d^3))*B*b^2*c*d*g^2*i^2 + 1/6*(2*x^3*log(b*e*x/(d*x + c) + a*
e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d
- a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a^2*d^2*g^2*i^2 + 1/
12*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6
*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2
*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a*b*d^2*g^2*i^2 + 1/60*
(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12
*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a
^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)
/(b^4*d^4))*B*b^2*d^2*g^2*i^2 + A*a^2*c^2*g^2*i^2*x
```

mupad [B] time = 5.34, size = 1287, normalized size = 3.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] log((e*(a + b*x))/(c + d*x))*((B*g^2*i^2*x^3*(a^2*d^2 + b^2*c^2 + 4*a*b*c*d
))/3 + B*a^2*c^2*g^2*i^2*x + (B*b^2*d^2*g^2*i^2*x^5)/5 + B*a*c*g^2*i^2*x^2*
(a*d + b*c) + (B*b*d*g^2*i^2*x^4*(a*d + b*c))/2) - x^3*(((30*a*d + 30*b*c)*
((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d - B*b*c))/5 - (A*b*d*g^2*i^2*(30
*a*d + 30*b*c))/30))/(90*b*d) - (g^2*i^2*(6*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2
*d^2 - B*b^2*c^2 + 18*A*a*b*c*d))/6 + (A*a*b*c*d*g^2*i^2)/3) + x*((a*c*(((3
0*a*d + 30*b*c)*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d - B*b*c))/5 - (A
*b*d*g^2*i^2*(30*a*d + 30*b*c))/30))/(30*b*d) - (g^2*i^2*(6*A*a^2*d^2 + 6*A
*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 18*A*a*b*c*d))/2 + A*a*b*c*d*g^2*i^2))/(
b*d) - ((30*a*d + 30*b*c)*(((30*a*d + 30*b*c)*(((30*a*d + 30*b*c)*((b*d*g^2
*i^2*(15*A*a*d + 15*A*b*c + B*a*d - B*b*c))/5 - (A*b*d*g^2*i^2*(30*a*d + 30
*b*c))/30))/(30*b*d) - (g^2*i^2*(6*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2 - B*
b^2*c^2 + 18*A*a*b*c*d))/2 + A*a*b*c*d*g^2*i^2))/(30*b*d) + (g^2*i^2*(3*A*a
^3*d^3 + 3*A*b^3*c^3 + B*a^3*d^3 - B*b^3*c^3 + 27*A*a*b^2*c^2*d + 27*A*a^2*
b*c*d^2 - 3*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(3*b*d) - (a*c*((b*d*g^2*i^2*
(15*A*a*d + 15*A*b*c + B*a*d - B*b*c))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c)
)/30))/(b*d)))/(30*b*d) + (a*c*g^2*i^2*(3*A*a^2*d^2 + 3*A*b^2*c^2 + B*a^2*d
^2 - B*b^2*c^2 + 9*A*a*b*c*d))/(b*d)) + x^2*(((30*a*d + 30*b*c)*(((30*a*d +
 30*b*c)*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d - B*b*c))/5 - (A*b*d*g^
2*i^2*(30*a*d + 30*b*c))/30))/(30*b*d) - (g^2*i^2*(6*A*a^2*d^2 + 6*A*b^2*c^
2 + B*a^2*d^2 - B*b^2*c^2 + 18*A*a*b*c*d))/2 + A*a*b*c*d*g^2*i^2))/(60*b*d)
 + (g^2*i^2*(3*A*a^3*d^3 + 3*A*b^3*c^3 + B*a^3*d^3 - B*b^3*c^3 + 27*A*a*b^2
*c^2*d + 27*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(6*b*d) - (
a*c*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d - B*b*c))/5 - (A*b*d*g^2*i^2
*(30*a*d + 30*b*c))/30))/(2*b*d)) + x^4*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c
+ B*a*d - B*b*c))/20 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/120) + (log(a + b*
x)*(B*a^5*d^2*g^2*i^2 + 10*B*a^3*b^2*c^2*g^2*i^2 - 5*B*a^4*b*c*d*g^2*i^2))/
(30*b^3) - (log(c + d*x)*(B*b^2*c^5*g^2*i^2 + 10*B*a^2*c^3*d^2*g^2*i^2 - 5*
B*a*b*c^4*d*g^2*i^2))/(30*d^3) + (A*b^2*d^2*g^2*i^2*x^5)/5
```

sympy [B] time = 7.81, size = 1266, normalized size = 3.76

$$\frac{Ab^2d^2g^2i^2x^5}{5}+\frac{Ba^3g^2i^2\left(a^2d^2-5abcd+10b^2c^2\right)\log\left(x+\frac{Ba^5cd^4g^2i^2-5Ba^4bc^2d^3g^2i^2+\frac{Ba^4d^3g^2i^2\left(a^2d^2-5abcd+10b^2c^2\right)}{b}+20Ba^3b^2c^3d^2g^2i}{Ba^5d^5g^2i^2-5Ba^4bcd^4g^2i^2+10Ba^3b^2c^2d^3g^2i^2+10B}\right.}{30b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*b**2*d**2*g**2*i**2*x**5/5 + B*a**3*g**2*i**2*(a**2*d**2 - 5*a*b*c*d + 10
*b**2*c**2)*log(x + (B*a**5*c*d**4*g**2*i**2 - 5*B*a**4*b*c**2*d**3*g**2*i*
*2 + B*a**4*d**3*g**2*i**2*(a**2*d**2 - 5*a*b*c*d + 10*b**2*c**2)/b + 20*B*
a**3*b**2*c**3*d**2*g**2*i**2 - B*a**3*c*d**2*g**2*i**2*(a**2*d**2 - 5*a*b*
c*d + 10*b**2*c**2) - 5*B*a**2*b**3*c**4*d*g**2*i**2 + B*a*b**4*c**5*g**2*i
**2)/(B*a**5*d**5*g**2*i**2 - 5*B*a**4*b*c*d**4*g**2*i**2 + 10*B*a**3*b**2*
c**2*d**3*g**2*i**2 + 10*B*a**2*b**3*c**3*d**2*g**2*i**2 - 5*B*a*b**4*c**4*
d*g**2*i**2 + B*b**5*c**5*g**2*i**2))/(30*b**3) - B*c**3*g**2*i**2*(10*a**2
*d**2 - 5*a*b*c*d + b**2*c**2)*log(x + (B*a**5*c*d**4*g**2*i**2 - 5*B*a**4*
b*c**2*d**3*g**2*i**2 + 20*B*a**3*b**2*c**3*d**2*g**2*i**2 - 5*B*a**2*b**3*
c**4*d*g**2*i**2 + B*a*b**4*c**5*g**2*i**2 - B*a*b**2*c**3*g**2*i**2*(10*a*
*2*d**2 - 5*a*b*c*d + b**2*c**2) + B*b**3*c**4*g**2*i**2*(10*a**2*d**2 - 5*
a*b*c*d + b**2*c**2)/d)/(B*a**5*d**5*g**2*i**2 - 5*B*a**4*b*c*d**4*g**2*i**
2 + 10*B*a**3*b**2*c**2*d**3*g**2*i**2 + 10*B*a**2*b**3*c**3*d**2*g**2*i**2
 - 5*B*a*b**4*c**4*d*g**2*i**2 + B*b**5*c**5*g**2*i**2))/(30*d**3) + x**4*(
A*a*b*d**2*g**2*i**2/2 + A*b**2*c*d*g**2*i**2/2 + B*a*b*d**2*g**2*i**2/20 -
 B*b**2*c*d*g**2*i**2/20) + x**3*(A*a**2*d**2*g**2*i**2/3 + 4*A*a*b*c*d*g**
2*i**2/3 + A*b**2*c**2*g**2*i**2/3 + B*a**2*d**2*g**2*i**2/10 - B*b**2*c**2
```

```
*g**2*i**2/10) + x**2*(A*a**2*c*d*g**2*i**2 + A*a*b*c**2*g**2*i**2 + B*a**3
*d**2*g**2*i**2/(60*b) + B*a**2*c*d*g**2*i**2/4 - B*a*b*c**2*g**2*i**2/4 -
B*b**2*c**3*g**2*i**2/(60*d)) + x*(A*a**2*c**2*g**2*i**2 - B*a**4*d**2*g**2
*i**2/(30*b**2) + B*a**3*c*d*g**2*i**2/(6*b) - B*a*b*c**3*g**2*i**2/(6*d) +
 B*b**2*c**4*g**2*i**2/(30*d**2)) + (B*a**2*c**2*g**2*i**2*x + B*a**2*c*d*g
**2*i**2*x**2 + B*a**2*d**2*g**2*i**2*x**3/3 + B*a*b*c**2*g**2*i**2*x**2 +
4*B*a*b*c*d*g**2*i**2*x**3/3 + B*a*b*d**2*g**2*i**2*x**4/2 + B*b**2*c**2*g*
*2*i**2*x**3/3 + B*b**2*c*d*g**2*i**2*x**4/2 + B*b**2*d**2*g**2*i**2*x**5/5
)*log(e*(a + b*x)/(c + d*x))
```

3.12 $\int (ag+bgx)(ci+dix)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\,dx$

Optimal. Leaf size=239

$$-\frac{gi^2(c+dx)^3(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3d^2}+\frac{bgi^2(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4d^2}+\frac{Bgi^2(bc-ad)^4\log\left(\frac{a+bx}{c+dx}\right)}{12b^3d^2}+\frac{Bg}{}$$

```
[Out] 1/12*B*(-a*d+b*c)^3*g*i^2*x/b^2/d+1/24*B*(-a*d+b*c)^2*g*i^2*(d*x+c)^2/b/d^2
-1/12*B*(-a*d+b*c)*g*i^2*(d*x+c)^3/d^2+1/12*B*(-a*d+b*c)^4*g*i^2*ln((b*x+a)
/(d*x+c))/b^3/d^2-1/3*(-a*d+b*c)*g*i^2*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c))
)/d^2+1/4*b*g*i^2*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^2+1/12*B*(-a*d+b*
c)^4*g*i^2*ln(d*x+c)/b^3/d^2
```

Rubi [A] time = 0.34, antiderivative size = 200, normalized size of antiderivative = 0.84, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2528, 2525, 12, 43}

$$-\frac{gi^2(c+dx)^3(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3d^2}+\frac{bgi^2(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4d^2}+\frac{Bgi^2(bc-ad)^4\log(a+bx)}{12b^3d^2}+\frac{B}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] (B*(b*c - a*d)^3*g*i^2*x)/(12*b^2*d) + (B*(b*c - a*d)^2*g*i^2*(c + d*x)^2)/
(24*b*d^2) - (B*(b*c - a*d)*g*i^2*(c + d*x)^3)/(12*d^2) + (B*(b*c - a*d)^4*
g*i^2*Log[a + b*x])/(12*b^3*d^2) - ((b*c - a*d)*g*i^2*(c + d*x)^3*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]))/(3*d^2) + (b*g*i^2*(c + d*x)^4*(A + B*Log[(e*(
a + b*x))/(c + d*x)]))/(4*d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (12c+12dx)^2(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx = \int\left(\frac{(-bc+ad)g(12c+12dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d}\right.$$

$$=\frac{(bg)\int(12c+12dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{12d}+\frac{((-b}{}$$

$$=-\frac{48(bc-ad)g(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^2}+\frac{36b}{}$$

$$=-\frac{48(bc-ad)g(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^2}+\frac{36b}{}$$

$$=-\frac{48(bc-ad)g(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^2}+\frac{36b}{}$$

$$=\frac{12B(bc-ad)^3gx}{b^2d}+\frac{6B(bc-ad)^2g(c+dx)^2}{bd^2}-\frac{12B(b}{}$$

Mathematica [A] time = 0.18, size = 216, normalized size = 0.90

$$\frac{gi^2\left(6b(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-8(c+dx)^3(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+\frac{4B(bc-ad)^2\left(2bdx(bc-ad)+2(bc-ad)\right.}{b^3}\right.}{24d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]
),x]
```

```
[Out] (g*i^2*((4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c
- a*d)^2*Log[a + b*x]))/b^3 - (B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x + 3*b^2
*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]
))/b^3 - 8*(b*c - a*d)*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6
*b*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(24*d^2)
```

fricas [A] time = 1.00, size = 367, normalized size = 1.54

$$\frac{6\,Ab^4d^4gi^2x^4+2\left((8\,A-B)b^4cd^3+(4\,A+B)ab^3d^4\right)gi^2x^3+\left((12\,A-5\,B)b^4c^2d^2+4\,(6\,A+B)ab^3cd^3+Ba^2b^2d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="fricas")
```

```
[Out] 1/24*(6*A*b^4*d^4*g*i^2*x^4 + 2*((8*A - B)*b^4*c*d^3 + (4*A + B)*a*b^3*d^4)
*g*i^2*x^3 + ((12*A - 5*B)*b^4*c^2*d^2 + 4*(6*A + B)*a*b^3*c*d^3 + B*a^2*b^
2*d^4)*g*i^2*x^2 - 2*(B*b^4*c^3*d - 2*(6*A - B)*a*b^3*c^2*d^2 - 4*B*a^2*b^2
*c*d^3 + B*a^3*b*d^4)*g*i^2*x + 2*(6*B*a^2*b^2*c^2*d^2 - 4*B*a^3*b*c*d^3 +
B*a^4*d^4)*g*i^2*log(b*x + a) + 2*(B*b^4*c^4 - 4*B*a*b^3*c^3*d)*g*i^2*log(d
*x + c) + 2*(3*B*b^4*d^4*g*i^2*x^4 + 12*B*a*b^3*c^2*d^2*g*i^2*x + 4*(2*B*b^
4*c*d^3 + B*a*b^3*d^4)*g*i^2*x^3 + 6*(B*b^4*c^2*d^2 + 2*B*a*b^3*c*d^3)*g*i^
2*x^2)*log((b*e*x + a*e)/(d*x + c)))/(b^3*d^2)
```

giac [B] time = 1.06, size = 3856, normalized size = 16.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="giac")
```

```
[Out] 1/24*(2*B*b^9*c^5*g*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 10*B*a*b^8*
c^4*d*g*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 20*B*a^2*b^7*c^3*d^2*g*
e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 20*B*a^3*b^6*c^2*d^3*g*e^5*log(
-b*e + (b*x*e + a*e)*d/(d*x + c)) + 10*B*a^4*b^5*c*d^4*g*e^5*log(-b*e + (b*
x*e + a*e)*d/(d*x + c)) - 2*B*a^5*b^4*d^5*g*e^5*log(-b*e + (b*x*e + a*e)*d/
(d*x + c)) - 8*(b*x*e + a*e)*B*b^8*c^5*d*g*e^4*log(-b*e + (b*x*e + a*e)*d/(
d*x + c))/(d*x + c) + 40*(b*x*e + a*e)*B*a*b^7*c^4*d^2*g*e^4*log(-b*e + (b*
x*e + a*e)*d/(d*x + c))/(d*x + c) - 80*(b*x*e + a*e)*B*a^2*b^6*c^3*d^3*g*e^
4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 80*(b*x*e + a*e)*B*a^3*
b^5*c^2*d^4*g*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 40*(b*x
*e + a*e)*B*a^4*b^4*c*d^5*g*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x
+ c) + 8*(b*x*e + a*e)*B*a^5*b^3*d^6*g*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x
+ c))/(d*x + c) + 12*(b*x*e + a*e)^2*B*b^7*c^5*d^2*g*e^3*log(-b*e + (b*x*e
+ a*e)*d/(d*x + c))/(d*x + c)^2 - 60*(b*x*e + a*e)^2*B*a*b^6*c^4*d^3*g*e^3*
log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 120*(b*x*e + a*e)^2*B*a
^2*b^5*c^3*d^4*g*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 12
0*(b*x*e + a*e)^2*B*a^3*b^4*c^2*d^5*g*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x +
 c))/(d*x + c)^2 + 60*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*g*e^3*log(-b*e + (b*x
*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 12*(b*x*e + a*e)^2*B*a^5*b^2*d^7*g*e^3
*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 8*(b*x*e + a*e)^3*B*b^
6*c^5*d^3*g*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 40*(b*x
*e + a*e)^3*B*a*b^5*c^4*d^4*g*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*
x + c)^3 - 80*(b*x*e + a*e)^3*B*a^2*b^4*c^3*d^5*g*e^2*log(-b*e + (b*x*e + a
*e)*d/(d*x + c))/(d*x + c)^3 + 80*(b*x*e + a*e)^3*B*a^3*b^3*c^2*d^6*g*e^2*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 40*(b*x*e + a*e)^3*B*a^4
*b^2*c*d^7*g*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 8*(b*x
*e + a*e)^3*B*a^5*b*d^8*g*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x +
c)^3 + 2*(b*x*e + a*e)^4*B*b^5*c^5*d^4*g*e*log(-b*e + (b*x*e + a*e)*d/(d*x
+ c))/(d*x + c)^4 - 10*(b*x*e + a*e)^4*B*a*b^4*c^4*d^5*g*e*log(-b*e + (b*x*
e + a*e)*d/(d*x + c))/(d*x + c)^4 + 20*(b*x*e + a*e)^4*B*a^2*b^3*c^3*d^6*g*
e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 20*(b*x*e + a*e)^4*B*
a^3*b^2*c^2*d^7*g*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 10*
(b*x*e + a*e)^4*B*a^4*b*c*d^8*g*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*
x + c)^4 - 2*(b*x*e + a*e)^4*B*a^5*d^9*g*e*log(-b*e + (b*x*e + a*e)*d/(d*x
+ c))/(d*x + c)^4 - 12*(b*x*e + a*e)^2*B*b^7*c^5*d^2*g*e^3*log((b*x*e + a*e
)/(d*x + c))/(d*x + c)^2 + 60*(b*x*e + a*e)^2*B*a*b^6*c^4*d^3*g*e^3*log((b*
x*e + a*e)/(d*x + c))/(d*x + c)^2 - 120*(b*x*e + a*e)^2*B*a^2*b^5*c^3*d^4*g
*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 120*(b*x*e + a*e)^2*B*a^3*b
^4*c^2*d^5*g*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 60*(b*x*e + a*e
)^2*B*a^4*b^3*c*d^6*g*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 12*(b*
x*e + a*e)^2*B*a^5*b^2*d^7*g*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 +
 8*(b*x*e + a*e)^3*B*b^6*c^5*d^3*g*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x +
c)^3 - 40*(b*x*e + a*e)^3*B*a*b^5*c^4*d^4*g*e^2*log((b*x*e + a*e)/(d*x + c)
)/(d*x + c)^3 + 80*(b*x*e + a*e)^3*B*a^2*b^4*c^3*d^5*g*e^2*log((b*x*e + a*e
)/(d*x + c))/(d*x + c)^3 - 80*(b*x*e + a*e)^3*B*a^3*b^3*c^2*d^6*g*e^2*log((
b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 40*(b*x*e + a*e)^3*B*a^4*b^2*c*d^7*g*
e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 8*(b*x*e + a*e)^3*B*a^5*b*d^
8*g*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 2*(b*x*e + a*e)^4*B*b^5*
c^5*d^4*g*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 10*(b*x*e + a*e)^4*B
*a*b^4*c^4*d^5*g*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 20*(b*x*e + a
*e)^4*B*a^2*b^3*c^3*d^6*g*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 20*(
b*x*e + a*e)^4*B*a^3*b^2*c^2*d^7*g*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)
^4 - 10*(b*x*e + a*e)^4*B*a^4*b*c*d^8*g*e*log((b*x*e + a*e)/(d*x + c))/(d*x
 + c)^4 + 2*(b*x*e + a*e)^4*B*a^5*d^9*g*e*log((b*x*e + a*e)/(d*x + c))/(d*x
 + c)^4 + 2*A*b^9*c^5*g*e^5 - B*b^9*c^5*g*e^5 - 10*A*a*b^8*c^4*d*g*e^5 + 5*
```

```
B*a*b^8*c^4*d*g*e^5 + 20*A*a^2*b^7*c^3*d^2*g*e^5 - 10*B*a^2*b^7*c^3*d^2*g*e
^5 - 20*A*a^3*b^6*c^2*d^3*g*e^5 + 10*B*a^3*b^6*c^2*d^3*g*e^5 + 10*A*a^4*b^5
*c*d^4*g*e^5 - 5*B*a^4*b^5*c*d^4*g*e^5 - 2*A*a^5*b^4*d^5*g*e^5 + B*a^5*b^4*
d^5*g*e^5 - 8*(b*x*e + a*e)*A*b^8*c^5*d*g*e^4/(d*x + c) + 6*(b*x*e + a*e)*B
*b^8*c^5*d*g*e^4/(d*x + c) + 40*(b*x*e + a*e)*A*a*b^7*c^4*d^2*g*e^4/(d*x +
c) - 30*(b*x*e + a*e)*B*a*b^7*c^4*d^2*g*e^4/(d*x + c) - 80*(b*x*e + a*e)*A*
a^2*b^6*c^3*d^3*g*e^4/(d*x + c) + 60*(b*x*e + a*e)*B*a^2*b^6*c^3*d^3*g*e^4/
(d*x + c) + 80*(b*x*e + a*e)*A*a^3*b^5*c^2*d^4*g*e^4/(d*x + c) - 60*(b*x*e
+ a*e)*B*a^3*b^5*c^2*d^4*g*e^4/(d*x + c) - 40*(b*x*e + a*e)*A*a^4*b^4*c*d^5
*g*e^4/(d*x + c) + 30*(b*x*e + a*e)*B*a^4*b^4*c*d^5*g*e^4/(d*x + c) + 8*(b*
x*e + a*e)*A*a^5*b^3*d^6*g*e^4/(d*x + c) - 6*(b*x*e + a*e)*B*a^5*b^3*d^6*g*
e^4/(d*x + c) - 7*(b*x*e + a*e)^2*B*b^7*c^5*d^2*g*e^3/(d*x + c)^2 + 35*(b*x
*e + a*e)^2*B*a*b^6*c^4*d^3*g*e^3/(d*x + c)^2 - 70*(b*x*e + a*e)^2*B*a^2*b^
5*c^3*d^4*g*e^3/(d*x + c)^2 + 70*(b*x*e + a*e)^2*B*a^3*b^4*c^2*d^5*g*e^3/(d
*x + c)^2 - 35*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*g*e^3/(d*x + c)^2 + 7*(b*x*e
 + a*e)^2*B*a^5*b^2*d^7*g*e^3/(d*x + c)^2 + 2*(b*x*e + a*e)^3*B*b^6*c^5*d^3
*g*e^2/(d*x + c)^3 - 10*(b*x*e + a*e)^3*B*a*b^5*c^4*d^4*g*e^2/(d*x + c)^3 +
 20*(b*x*e + a*e)^3*B*a^2*b^4*c^3*d^5*g*e^2/(d*x + c)^3 - 20*(b*x*e + a*e)^
3*B*a^3*b^3*c^2*d^6*g*e^2/(d*x + c)^3 + 10*(b*x*e + a*e)^3*B*a^4*b^2*c*d^7*
g*e^2/(d*x + c)^3 - 2*(b*x*e + a*e)^3*B*a^5*b*d^8*g*e^2/(d*x + c)^3)*(b*c/(
(b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^7*d^2*
e^4 - 4*(b*x*e + a*e)*b^6*d^3*e^3/(d*x + c) + 6*(b*x*e + a*e)^2*b^5*d^4*e^2
/(d*x + c)^2 - 4*(b*x*e + a*e)^3*b^4*d^5*e/(d*x + c)^3 + (b*x*e + a*e)^4*b^
3*d^6/(d*x + c)^4)
```

maple [B] time = 0.15, size = 3439, normalized size = 14.39

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

```
[Out] 2/d*e^4*B*g*i^2*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x
+c)*b*c*e)^4*a*c^7/(d*x+c)^4+7*d^3*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^5/(d*x+c)^3*c^2+14*d*e^4*B*g*i^
2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a
^3*c^5/(d*x+c)^4+2*d^5*e^4*B*g*i^2/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(
d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^7/(d*x+c)^4*c-7*d^4*e^4*B*g*i^2/b*ln(b/d*
e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^6/(d*x+c)^4*
c^2+1/24*d^2*e^2*B*g*i^2/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4+1/3*d^2*
e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*
e)^3*a^4+1/2*e^3*B*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^2*b^2+2*
e^3*A*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^2*b^2+1/4*e^2*B*g*i^2
/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c^2*b+1/3*d*B*g*i^2/b^2*ln(-b*e+(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3*c+1/4*d^2*e^4*A*g*i^2*b/(1/(d*x+c)*a*d*e
-1/(d*x+c)*b*c*e)^4*a^4+1/4/d^2*e^4*A*g*i^2*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*
b*c*e)^4*c^4+1/3/d^2*e^3*A*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^4*c^
4-1/6*d*e^2*B*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*c-1/12/d^2*e*B*
g*i^2*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^4+1/24/d^2*e^2*B*g*i^2*b^3/(1
/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^4+1/12/d^2*e^3*B*g*i^2/(1/(d*x+c)*a*d*e
-1/(d*x+c)*b*c*e)^3*b^4*c^4-1/12*d^2*e*B*g*i^2/b^2/(1/(d*x+c)*a*d*e-1/(d*x+
c)*b*c*e)*a^4+3/2*e^4*A*g*i^2*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*c
^2-35/2*d^2*e^4*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)^4*a^4/(d*x+c)^4*c^4*b+35/3*d*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c^4/(d*x+c)^3-7/3*d^
4*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)^3*a^6/(d*x+c)^3*c+7/3/d*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*c^6/(d*x+c)^3-4/3*d*e^3*A*g*i^2
/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*b*c+1/4*d^2*e^4*B*g*i^2*b*ln(b/d*e
+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^4+1/4/d^2*e^4
```

```
*B*g*i^2*b^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c
*e)^4*c^4+1/3/d^2*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^4/(1/(d*x+c
)*a*d*e-1/(d*x+c)*b*c*e)^3*c^4+3/2*e^4*B*g*i^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*c^2+2*e^3*B*g*i^2*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^2-1/12
/d^2*B*g*i^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^4*b-1/12*d^2*B*g*i^
2/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^4-1/2*e*B*g*i^2/(1/(d*x+c)
*a*d*e-1/(d*x+c)*b*c*e)*a^2*c^2+1/3*d^2*e^3*A*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x
+c)*b*c*e)^3*a^4+1/12*d^2*e^3*B*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a
^4-1/2*B*g*i^2/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*c^2+1/3/d*B*g
*i^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^3*a-7*e^3*B*g*i^2*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^5/(d*x
+c)^3-1/d*e^4*B*g*i^2*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)^4*a*c^3+1/3*d^5*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)/b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^7/(d*x+c)^3-7*e^4*B*g*i^2*b^3*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*c^6/
(d*x+c)^4-35/3*d^2*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a
*d*e-1/(d*x+c)*b*c*e)^3*a^4/(d*x+c)^3*c^3+14*d^3*e^4*B*g*i^2*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^5/(d*x+c)^4*c^3-d*e
^4*B*g*i^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b
*c*e)^4*a^3*c-4/3*d*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(1/(d*x+c
)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c-4/3/d*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^3*a-1/4/d^2*e^4*B*g*i^2*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^8/(d*x
+c)^4*b^5-1/3/d^2*e^3*B*g*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*
d*e-1/(d*x+c)*b*c*e)^3*c^7/(d*x+c)^3*b^4-1/4*d^6*e^4*B*g*i^2/b^3*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^8/(d*x+c)^4-1/3
*d*e^3*B*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*b*c-4/3/d*e^3*A*g*i^
2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^3*c^3*a-d*e^4*A*g*i^2*b^2/(1/(d*x+c
)*a*d*e-1/(d*x+c)*b*c*e)^4*a^3*c-1/d*e^4*A*g*i^2*b^4/(1/(d*x+c)*a*d*e-1/(d*
x+c)*b*c*e)^4*c^3*a-1/3/d*e^3*B*g*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b
^3*c^3*a-1/6/d*e^2*B*g*i^2*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3*a+1/
3*d*e*B*g*i^2/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3*c+1/3/d*e*B*g*i^2/(1/
(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*c^3*b
```

maxima [B] time = 1.25, size = 671, normalized size = 2.81

$$\frac{1}{4}Abd^2gi^2x^4+\frac{2}{3}Abcdgi^2x^3+\frac{1}{3}Aad^2gi^2x^3+\frac{1}{2}Abc^2gi^2x^2+Aacdgi^2x^2+\left(x\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)+\frac{a\log(bx+a)}{b}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="maxima")
```

```
[Out] 1/4*A*b*d^2*g*i^2*x^4 + 2/3*A*b*c*d*g*i^2*x^3 + 1/3*A*a*d^2*g*i^2*x^3 + 1/2
*A*b*c^2*g*i^2*x^2 + A*a*c*d*g*i^2*x^2 + (x*log(b*e*x/(d*x + c) + a*e/(d*x
+ c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*B*a*c^2*g*i^2 + 1/2*(x^2*log(b
*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d
^2 - (b*c - a*d)*x/(b*d))*B*b*c^2*g*i^2 + (x^2*log(b*e*x/(d*x + c) + a*e/(d
*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d
))*B*a*c*d*g*i^2 + 1/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*
log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b
^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*b*c*d*g*i^2 + 1/6*(2*x^3*log(b*e*x/(d*x +
 c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((
b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a*d^2*g*i^2
+ 1/24*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4
 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d -
 a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*b*d^2*g*i^2 + A*a*c
^2*g*i^2*x
```

mupad [B] time = 5.00, size = 636, normalized size = 2.66

$$x^3\left(\frac{d\,g\,i^2\,\left(8\,A\,a\,d+12\,A\,b\,c+B\,a\,d-B\,b\,c\right)}{12}-\frac{A\,d\,g\,i^2\,\left(12\,a\,d+12\,b\,c\right)}{36}\right)-x^2\left(\frac{\left(\frac{d\,g\,i^2\,(8\,A\,a\,d+12\,A\,b\,c+B\,a\,d-B\,b\,c)}{4}-\frac{A}{}\right.}{24}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] x^3*((d*g*i^2*(8*A*a*d + 12*A*b*c + B*a*d - B*b*c))/12 - (A*d*g*i^2*(12*a*d
 + 12*b*c))/36) - x^2*((((d*g*i^2*(8*A*a*d + 12*A*b*c + B*a*d - B*b*c))/4 -
 (A*d*g*i^2*(12*a*d + 12*b*c))/12)*(12*a*d + 12*b*c))/(24*b*d) - (g*i^2*(3*
A*a^2*d^2 + 9*A*b^2*c^2 + B*a^2*d^2 - 2*B*b^2*c^2 + 18*A*a*b*c*d + B*a*b*c*
d))/(6*b) + (A*a*c*d*g*i^2)/2) + log((e*(a + b*x))/(c + d*x))*(B*a*c^2*g*i^
2*x + (B*c*g*i^2*x^2*(2*a*d + b*c))/2 + (B*d*g*i^2*x^3*(a*d + 2*b*c))/3 + (
B*b*d^2*g*i^2*x^4)/4) + x*(((12*a*d + 12*b*c)*((((d*g*i^2*(8*A*a*d + 12*A*b
*c + B*a*d - B*b*c))/4 - (A*d*g*i^2*(12*a*d + 12*b*c))/12)*(12*a*d + 12*b*c
))/(12*b*d) - (g*i^2*(3*A*a^2*d^2 + 9*A*b^2*c^2 + B*a^2*d^2 - 2*B*b^2*c^2 +
 18*A*a*b*c*d + B*a*b*c*d))/(3*b) + A*a*c*d*g*i^2))/(12*b*d) - (a*c*((d*g*i
^2*(8*A*a*d + 12*A*b*c + B*a*d - B*b*c))/4 - (A*d*g*i^2*(12*a*d + 12*b*c))/
12))/(b*d) + (c*g*i^2*(6*A*a^2*d^2 + 2*A*b^2*c^2 + 2*B*a^2*d^2 - B*b^2*c^2
+ 12*A*a*b*c*d - B*a*b*c*d))/(2*b*d)) + (log(a + b*x)*(B*a^4*d^2*g*i^2 + 6*
B*a^2*b^2*c^2*g*i^2 - 4*B*a^3*b*c*d*g*i^2))/(12*b^3) + (log(c + d*x)*(B*b*c
^4*g*i^2 - 4*B*a*c^3*d*g*i^2))/(12*d^2) + (A*b*d^2*g*i^2*x^4)/4
```

sympy [B] time = 5.07, size = 850, normalized size = 3.56

$$\frac{Abd^2gi^2x^4}{4}+\frac{Ba^2gi^2\left(a^2d^2-4abcd+6b^2c^2\right)\log\left(x+\frac{Ba^4cd^3gi^2-4Ba^3bc^2d^2gi^2+\frac{Ba^3d^2gi^2\left(a^2d^2-4abcd+6b^2c^2\right)}{b}+10Ba^2b^2c^3dgi^2-Ba^2cd}{Ba^4d^4gi^2-4Ba^3bcd^3gi^2+6Ba^2b^2c^2d^2gi^2+4Bab^3c^3dgi}\right.}{12b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*b*d**2*g*i**2*x**4/4 + B*a**2*g*i**2*(a**2*d**2 - 4*a*b*c*d + 6*b**2*c**2
)*log(x + (B*a**4*c*d**3*g*i**2 - 4*B*a**3*b*c**2*d**2*g*i**2 + B*a**3*d**2
*g*i**2*(a**2*d**2 - 4*a*b*c*d + 6*b**2*c**2)/b + 10*B*a**2*b**2*c**3*d*g*i
**2 - B*a**2*c*d*g*i**2*(a**2*d**2 - 4*a*b*c*d + 6*b**2*c**2) - B*a*b**3*c*
*4*g*i**2)/(B*a**4*d**4*g*i**2 - 4*B*a**3*b*c*d**3*g*i**2 + 6*B*a**2*b**2*c
**2*d**2*g*i**2 + 4*B*a*b**3*c**3*d*g*i**2 - B*b**4*c**4*g*i**2))/(12*b**3)
 - B*c**3*g*i**2*(4*a*d - b*c)*log(x + (B*a**4*c*d**3*g*i**2 - 4*B*a**3*b*c
**2*d**2*g*i**2 + 10*B*a**2*b**2*c**3*d*g*i**2 - B*a*b**3*c**4*g*i**2 - B*a
*b**2*c**3*g*i**2*(4*a*d - b*c) + B*b**3*c**4*g*i**2*(4*a*d - b*c)/d)/(B*a*
*4*d**4*g*i**2 - 4*B*a**3*b*c*d**3*g*i**2 + 6*B*a**2*b**2*c**2*d**2*g*i**2
+ 4*B*a*b**3*c**3*d*g*i**2 - B*b**4*c**4*g*i**2))/(12*d**2) + x**3*(A*a*d**
2*g*i**2/3 + 2*A*b*c*d*g*i**2/3 + B*a*d**2*g*i**2/12 - B*b*c*d*g*i**2/12) +
 x**2*(A*a*c*d*g*i**2 + A*b*c**2*g*i**2/2 + B*a**2*d**2*g*i**2/(24*b) + B*a
*c*d*g*i**2/6 - 5*B*b*c**2*g*i**2/24) + x*(A*a*c**2*g*i**2 - B*a**3*d**2*g*
i**2/(12*b**2) + B*a**2*c*d*g*i**2/(3*b) - B*a*c**2*g*i**2/6 - B*b*c**3*g*i
**2/(12*d)) + (B*a*c**2*g*i**2*x + B*a*c*d*g*i**2*x**2 + B*a*d**2*g*i**2*x*
*3/3 + B*b*c**2*g*i**2*x**2/2 + 2*B*b*c*d*g*i**2*x**3/3 + B*b*d**2*g*i**2*x
**4/4)*log(e*(a + b*x)/(c + d*x))
```

3.13 $\int (ci + dix)^2 \left(A + B \log\left(\frac{e(a+bx)}{c+dx}\right)\right) dx$

Optimal. Leaf size=118

$$\frac{i^2(c+dx)^3 \left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3d} - \frac{Bi^2(bc-ad)^3\log(a+bx)}{3b^3d} - \frac{Bi^2x(bc-ad)^2}{3b^2} - \frac{Bi^2(c+dx)^2(bc-ad)}{6bd}$$

```
[Out] -1/3*B*(-a*d+b*c)^2*i^2*x/b^2-1/6*B*(-a*d+b*c)*i^2*(d*x+c)^2/b/d-1/3*B*(-a*
d+b*c)^3*i^2*ln(b*x+a)/b^3/d+1/3*i^2*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/
d
```

Rubi [A] time = 0.07, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2525, 12, 43}

$$\frac{i^2(c+dx)^3 \left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3d} - \frac{Bi^2x(bc-ad)^2}{3b^2} - \frac{Bi^2(bc-ad)^3\log(a+bx)}{3b^3d} - \frac{Bi^2(c+dx)^2(bc-ad)}{6bd}$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] -(B*(b*c - a*d)^2*i^2*x)/(3*b^2) - (B*(b*c - a*d)*i^2*(c + d*x)^2)/(6*b*d)
- (B*(b*c - a*d)^3*i^2*Log[a + b*x])/(3*b^3*d) + (i^2*(c + d*x)^3*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]))/(3*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\int (13c+13dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx = \frac{169(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3d} - \frac{B\int\frac{2197(bc-ad)(c+dx)^2}{a+bx}dx}{39d}$$

$$= \frac{169(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3d} - \frac{(169B(bc-ad))\int\frac{(c+dx)^2}{a+bx}}{3d}$$

$$= \frac{169(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3d} - \frac{(169B(bc-ad))\int\left(\frac{d(bc-ad}{b^2}\right.}{3}$$

$$= -\frac{169B(bc-ad)^2x}{3b^2} - \frac{169B(bc-ad)(c+dx)^2}{6bd} - \frac{169B(bc-ad)^3}{3b^3}$$

Mathematica [A] time = 0.04, size = 97, normalized size = 0.82

$$\frac{i^2\left((c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-\frac{B(bc-ad)\left(2bdx(bc-ad)+2(bc-ad)^2\log(a+bx)+b^2(c+dx)^2\right)}{2b^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] (i^2*(-1/2*(B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c -
 a*d)^2*Log[a + b*x]))/b^3 + (c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)
])))/(3*d)
```

fricas [B] time = 0.95, size = 223, normalized size = 1.89

$$2\,Ab^3d^3i^2x^3 - 2\,Bb^3c^3i^2\log(dx+c) + \left((6\,A-B)b^3cd^2 + Bab^2d^3\right)i^2x^2 + 2\left((3\,A-2\,B)b^3c^2d + 3\,Bab^2cd^2 - Ba^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="fricas")
```

```
[Out] 1/6*(2*A*b^3*d^3*i^2*x^3 - 2*B*b^3*c^3*i^2*log(d*x + c) + ((6*A - B)*b^3*c*
d^2 + B*a*b^2*d^3)*i^2*x^2 + 2*((3*A - 2*B)*b^3*c^2*d + 3*B*a*b^2*c*d^2 - B
*a^2*b*d^3)*i^2*x + 2*(3*B*a*b^2*c^2*d - 3*B*a^2*b*c*d^2 + B*a^3*d^3)*i^2*l
og(b*x + a) + 2*(B*b^3*d^3*i^2*x^3 + 3*B*b^3*c*d^2*i^2*x^2 + 3*B*b^3*c^2*d*
i^2*x)*log((b*e*x + a*e)/(d*x + c)))/(b^3*d)
```

giac [B] time = 0.83, size = 2475, normalized size = 20.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")
```

```
[Out] -1/6*(2*B*b^7*c^4*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 8*B*a*b^6*c^3
*d*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 12*B*a^2*b^5*c^2*d^2*e^4*log
(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 8*B*a^3*b^4*c*d^3*e^4*log(-b*e + (b*x*
e + a*e)*d/(d*x + c)) + 2*B*a^4*b^3*d^4*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x
 + c)) - 6*(b*x*e + a*e)*B*b^6*c^4*d*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x +
c))/(d*x + c) + 24*(b*x*e + a*e)*B*a*b^5*c^3*d^2*e^3*log(-b*e + (b*x*e + a*
e)*d/(d*x + c))/(d*x + c) - 36*(b*x*e + a*e)*B*a^2*b^4*c^2*d^3*e^3*log(-b*e
 + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 24*(b*x*e + a*e)*B*a^3*b^3*c*d^4*
```

```
e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 6*(b*x*e + a*e)*B*a^4
*b^2*d^5*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 6*(b*x*e + a
*e)^2*B*b^5*c^4*d^2*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 -
 24*(b*x*e + a*e)^2*B*a*b^4*c^3*d^3*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c
))/(d*x + c)^2 + 36*(b*x*e + a*e)^2*B*a^2*b^3*c^2*d^4*e^2*log(-b*e + (b*x*e
 + a*e)*d/(d*x + c))/(d*x + c)^2 - 24*(b*x*e + a*e)^2*B*a^3*b^2*c*d^5*e^2*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 6*(b*x*e + a*e)^2*B*a^4*
b*d^6*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 2*(b*x*e + a*
e)^3*B*b^4*c^4*d^3*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 8*
(b*x*e + a*e)^3*B*a*b^3*c^3*d^4*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*
x + c)^3 - 12*(b*x*e + a*e)^3*B*a^2*b^2*c^2*d^5*e*log(-b*e + (b*x*e + a*e)*
d/(d*x + c))/(d*x + c)^3 + 8*(b*x*e + a*e)^3*B*a^3*b*c*d^6*e*log(-b*e + (b*
x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 2*(b*x*e + a*e)^3*B*a^4*d^7*e*log(-b*
e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 6*(b*x*e + a*e)*B*b^6*c^4*d*e^
3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 24*(b*x*e + a*e)*B*a*b^5*c^3*d^2
*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 36*(b*x*e + a*e)*B*a^2*b^4*c^
2*d^3*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 24*(b*x*e + a*e)*B*a^3*b
^3*c*d^4*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 6*(b*x*e + a*e)*B*a^4
*b^2*d^5*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 6*(b*x*e + a*e)^2*B*b
^5*c^4*d^2*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 24*(b*x*e + a*e)^
2*B*a*b^4*c^3*d^3*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 36*(b*x*e
+ a*e)^2*B*a^2*b^3*c^2*d^4*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 2
4*(b*x*e + a*e)^2*B*a^3*b^2*c*d^5*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c
)^2 - 6*(b*x*e + a*e)^2*B*a^4*b*d^6*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x +
 c)^2 + 2*(b*x*e + a*e)^3*B*b^4*c^4*d^3*e*log((b*x*e + a*e)/(d*x + c))/(d*x
 + c)^3 - 8*(b*x*e + a*e)^3*B*a*b^3*c^3*d^4*e*log((b*x*e + a*e)/(d*x + c))/
(d*x + c)^3 + 12*(b*x*e + a*e)^3*B*a^2*b^2*c^2*d^5*e*log((b*x*e + a*e)/(d*x
 + c))/(d*x + c)^3 - 8*(b*x*e + a*e)^3*B*a^3*b*c*d^6*e*log((b*x*e + a*e)/(d
*x + c))/(d*x + c)^3 + 2*(b*x*e + a*e)^3*B*a^4*d^7*e*log((b*x*e + a*e)/(d*x
 + c))/(d*x + c)^3 + 2*A*b^7*c^4*e^4 - 3*B*b^7*c^4*e^4 - 8*A*a*b^6*c^3*d*e^
4 + 12*B*a*b^6*c^3*d*e^4 + 12*A*a^2*b^5*c^2*d^2*e^4 - 18*B*a^2*b^5*c^2*d^2*
e^4 - 8*A*a^3*b^4*c*d^3*e^4 + 12*B*a^3*b^4*c*d^3*e^4 + 2*A*a^4*b^3*d^4*e^4
- 3*B*a^4*b^3*d^4*e^4 + 5*(b*x*e + a*e)*B*b^6*c^4*d*e^3/(d*x + c) - 20*(b*x
*e + a*e)*B*a*b^5*c^3*d^2*e^3/(d*x + c) + 30*(b*x*e + a*e)*B*a^2*b^4*c^2*d^
3*e^3/(d*x + c) - 20*(b*x*e + a*e)*B*a^3*b^3*c*d^4*e^3/(d*x + c) + 5*(b*x*e
 + a*e)*B*a^4*b^2*d^5*e^3/(d*x + c) - 2*(b*x*e + a*e)^2*B*b^5*c^4*d^2*e^2/(
d*x + c)^2 + 8*(b*x*e + a*e)^2*B*a*b^4*c^3*d^3*e^2/(d*x + c)^2 - 12*(b*x*e
+ a*e)^2*B*a^2*b^3*c^2*d^4*e^2/(d*x + c)^2 + 8*(b*x*e + a*e)^2*B*a^3*b^2*c*
d^5*e^2/(d*x + c)^2 - 2*(b*x*e + a*e)^2*B*a^4*b*d^6*e^2/(d*x + c)^2)*(b*c/(
(b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^6*d*e^
3 - 3*(b*x*e + a*e)*b^5*d^2*e^2/(d*x + c) + 3*(b*x*e + a*e)^2*b^4*d^3*e/(d*
x + c)^2 - (b*x*e + a*e)^3*b^3*d^4/(d*x + c)^3)
```

maple [B] time = 0.13, size = 1522, normalized size = 12.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

```
[Out] -1/3/d*e^3*B*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(1/(d*x+c)*a*d*e-1/(d*
x+c)*b*c*e)^3*c^3+e^3*A*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*b^2*c^2+d
*B*i^2/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*c+1/2*e^2*B*i^2/(1/
(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c^2*b+1/3*d*B*i^2*ln(-b*e+(b/d*e+(a*d-b*
c)/(d*x+c)/d*e)*d)*c^3+d*e*B*i^2/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2*c-
B*i^2/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a*c^2-1/3*d^2*B*i^2/b^3*ln
(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3+1/6*d^2*e^2*B*i^2/b/(1/(d*x+c)*a
*d*e-1/(d*x+c)*b*c*e)^2*a^3-1/6/d*e^2*B*i^2*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*
b*c*e)^2*c^3+1/3/d*e*B*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^3*b-e*B*i^2/
(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2*a+1/3*d^2*e^3*A*i^2/(1/(d*x+c)*a*d*e-
```

```
1/(d*x+c)*b*c*e)^3*a^3+e^3*B*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*
x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^2*a-d*e^3*A*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*
b*c*e)^3*a^2*b*c-1/2*d*e^2*B*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c-
1/3*d^2*e*B*i^2/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3+1/3*d^2*e^3*B*i^2
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3-1/
3/d*e^3*A*i^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^3*c^3+5*d^3*e^3*B*i^2*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^4/(d
*x+c)^3*c^2+5*d*e^3*B*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(1/(d*x+c)*a*d*
e-1/(d*x+c)*b*c*e)^3*a^2*c^4/(d*x+c)^3-2*d^4*e^3*B*i^2*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^5/(d*x+c)^3*c-d*e^3*B
*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^
2*b*c+1/3*d^5*e^3*B*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b^3/(1/(d*x+c)*a*d*
e-1/(d*x+c)*b*c*e)^3*a^6/(d*x+c)^3-2*e^3*B*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*c^5/(d*x+c)^3+1/3/d*e^3*B*i^2
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^
6/(d*x+c)^3-20/3*d^2*e^3*B*i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a
*d*e-1/(d*x+c)*b*c*e)^3*a^3/(d*x+c)^3*c^3
```

maxima [B] time = 1.10, size = 280, normalized size = 2.37

$$\frac{1}{3}Ad^2i^2x^3+Acdi^2x^2+\left(x\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)+\frac{a\log(bx+a)}{b}-\frac{c\log(dx+c)}{d}\right)Bc^2i^2+\left(x^2\log\left(\frac{bex}{dx+c}+\frac{a}{dx}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")
```

```
[Out] 1/3*A*d^2*i^2*x^3 + A*c*d*i^2*x^2 + (x*log(b*e*x/(d*x + c) + a*e/(d*x + c))
 + a*log(b*x + a)/b - c*log(d*x + c)/d)*B*c^2*i^2 + (x^2*log(b*e*x/(d*x + c
) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a
*d)*x/(b*d))*B*c*d*i^2 + 1/6*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) +
2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2
- 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*d^2*i^2 + A*c^2*i^2*x
```

mupad [B] time = 4.59, size = 290, normalized size = 2.46

$$x^2\left(\frac{d\,i^2\,\left(3\,A\,a\,d+9\,A\,b\,c+B\,a\,d-B\,b\,c\right)}{6\,b}-\frac{A\,d\,i^2\,\left(3\,a\,d+3\,b\,c\right)}{6\,b}\right)-x\left(\frac{\left(3\,a\,d+3\,b\,c\right)\,\left(\frac{d\,i^2\,\left(3\,A\,a\,d+9\,A\,b\,c+B\,a\,d-B\,b\,c\right)}{3\,b}\right.}{3\,b\,d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] x^2*((d*i^2*(3*A*a*d + 9*A*b*c + B*a*d - B*b*c))/(6*b) - (A*d*i^2*(3*a*d +
3*b*c))/(6*b)) - x*(((3*a*d + 3*b*c)*((d*i^2*(3*A*a*d + 9*A*b*c + B*a*d - B
*b*c))/(3*b) - (A*d*i^2*(3*a*d + 3*b*c))/(3*b)))/(3*b*d) - (c*i^2*(3*A*a*d
+ 3*A*b*c + B*a*d - B*b*c))/b + (A*a*c*d*i^2)/b) + log((e*(a + b*x))/(c + d
*x))*((B*d^2*i^2*x^3)/3 + B*c^2*i^2*x + B*c*d*i^2*x^2) + (log(a + b*x)*(B*a
^3*d^2*i^2 + 3*B*a*b^2*c^2*i^2 - 3*B*a^2*b*c*d*i^2))/(3*b^3) + (A*d^2*i^2*x
^3)/3 - (B*c^3*i^2*log(c + d*x))/(3*d)
```

sympy [B] time = 2.99, size = 491, normalized size = 4.16

$$\frac{Ad^2i^2x^3}{3}+\frac{Bai^2\left(a^2d^2-3abcd+3b^2c^2\right)\log\left(x+\frac{Ba^3cd^2i^2-3Ba^2bc^2di^2+\frac{Ba^2di^2\left(a^2d^2-3abcd+3b^2c^2\right)}{b}+4Bab^2c^3i^2-Baci^2\left(a^2d^2-3abcd+3b\right.}{Ba^3d^3i^2-3Ba^2bcd^2i^2+3Bab^2c^2di^2+Bb^3c^3i^2}\right.}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*d**2*i**2*x**3/3 + B*a*i**2*(a**2*d**2 - 3*a*b*c*d + 3*b**2*c**2)*log(x +
 (B*a**3*c*d**2*i**2 - 3*B*a**2*b*c**2*d*i**2 + B*a**2*d*i**2*(a**2*d**2 -
3*a*b*c*d + 3*b**2*c**2)/b + 4*B*a*b**2*c**3*i**2 - B*a*c*i**2*(a**2*d**2 -
 3*a*b*c*d + 3*b**2*c**2))/(B*a**3*d**3*i**2 - 3*B*a**2*b*c*d**2*i**2 + 3*B
*a*b**2*c**2*d*i**2 + B*b**3*c**3*i**2))/(3*b**3) - B*c**3*i**2*log(x + (B*
a**3*c*d**2*i**2 - 3*B*a**2*b*c**2*d*i**2 + 3*B*a*b**2*c**3*i**2 + B*b**3*c
**4*i**2/d)/(B*a**3*d**3*i**2 - 3*B*a**2*b*c*d**2*i**2 + 3*B*a*b**2*c**2*d*
i**2 + B*b**3*c**3*i**2))/(3*d) + x**2*(A*c*d*i**2 + B*a*d**2*i**2/(6*b) -
B*c*d*i**2/6) + x*(A*c**2*i**2 - B*a**2*d**2*i**2/(3*b**2) + B*a*c*d*i**2/b
 - 2*B*c**2*i**2/3) + (B*c**2*i**2*x + B*c*d*i**2*x**2 + B*d**2*i**2*x**3/3
)*log(e*(a + b*x)/(c + d*x))
```

3.14 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{ag+bgx}\,dx$

Optimal. Leaf size=276

$$\frac{di^2(a+bx)(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g}-\frac{i^2(bc-ad)^2\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g}+\frac{i^2(c+dx)^2\left(B\right.}{2}$$

```
[Out] -1/2*B*d*(-a*d+b*c)*i^2*x/b^2/g-1/2*B*(-a*d+b*c)^2*i^2*ln((b*x+a)/(d*x+c))/
b^3/g+d*(-a*d+b*c)*i^2*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^3/g+1/2*i^2*(d
*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/b/g-3/2*B*(-a*d+b*c)^2*i^2*ln(d*x+c)/b^
3/g-(-a*d+b*c)^2*i^2*(A+B*ln(e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/
b^3/g+B*(-a*d+b*c)^2*i^2*polylog(2,b*(d*x+c)/d/(b*x+a))/b^3/g
```

Rubi [A] time = 0.49, antiderivative size = 354, normalized size of antiderivative = 1.28, number of steps used = 19, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2486, 31, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 43}

$$\frac{Bi^2(bc-ad)^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^3g}+\frac{i^2(bc-ad)^2\log(ag+bgx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g}+\frac{Adi^2x(bc-ad)}{b^2g}+\frac{i^2(c+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x),x]
```

```
[Out] (A*d*(b*c - a*d)*i^2*x)/(b^2*g) - (B*d*(b*c - a*d)*i^2*x)/(2*b^2*g) - (B*(b
*c - a*d)^2*i^2*Log[a + b*x])/(2*b^3*g) - (B*(b*c - a*d)^2*i^2*Log[g*(a + b
*x)]^2)/(2*b^3*g) + (B*d*(b*c - a*d)*i^2*(a + b*x)*Log[(e*(a + b*x))/(c + d
*x)])/(b^3*g) + (i^2*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b
*g) - (B*(b*c - a*d)^2*i^2*Log[c + d*x])/(b^3*g) + ((b*c - a*d)^2*i^2*(A +
B*Log[(e*(a + b*x))/(c + d*x)])*Log[a*g + b*g*x])/(b^3*g) + (B*(b*c - a*d)^
2*i^2*Log[(b*(c + d*x))/(b*c - a*d)]*Log[a*g + b*g*x])/(b^3*g) + (B*(b*c -
a*d)^2*i^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
```

```
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(14c+14dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{ag+bgx}\,dx = \int\left(\frac{196d(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g}+\frac{14d(14c+14dx)\left(A+\right.}{bg}\right.$$

$$=\frac{\left(196(bc-ad)^2\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{ag+bgx}\,dx}{b^2}+\frac{(14d)\int(14c+14dx)\left(A+\right.}{bg}$$

$$=\frac{196Ad(bc-ad)x}{b^2g}+\frac{98(c+dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{bg}+\frac{196(bc-}{}$$

$$=\frac{196Ad(bc-ad)x}{b^2g}+\frac{196Bd(bc-ad)(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g}+\frac{98(c+}{}$$

$$=\frac{196Ad(bc-ad)x}{b^2g}+\frac{196Bd(bc-ad)(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g}+\frac{98(c+}{}$$

$$=\frac{196Ad(bc-ad)x}{b^2g}-\frac{98Bd(bc-ad)x}{b^2g}-\frac{98B(bc-ad)^2\log(a+bx)}{b^3g}$$

$$=\frac{196Ad(bc-ad)x}{b^2g}-\frac{98Bd(bc-ad)x}{b^2g}-\frac{98B(bc-ad)^2\log(a+bx)}{b^3g}$$

$$=\frac{196Ad(bc-ad)x}{b^2g}-\frac{98Bd(bc-ad)x}{b^2g}-\frac{98B(bc-ad)^2\log(a+bx)}{b^3g}$$

$$=\frac{196Ad(bc-ad)x}{b^2g}-\frac{98Bd(bc-ad)x}{b^2g}-\frac{98B(bc-ad)^2\log(a+bx)}{b^3g}$$

Mathematica [A] time = 0.19, size = 252, normalized size = 0.91

$$\frac{i^2\left(b^2(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2(bc-ad)^2\log(g(a+bx))\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2Abdx(bc-ad)+2B\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x),x]
```

```
[Out] (i^2*(2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*(b*d*x + (b*c - a*d)*Log[a + b*
x]) + 2*B*d*(b*c - a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + b^2*(c + d
*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*(b*c - a*d)^2*Log[g*(a + b*x
)]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2*B*(b*c - a*d)^2*Log[c + d*x] +
B*(b*c - a*d)^2*(-(Log[g*(a + b*x)]*(Log[g*(a + b*x)] - 2*Log[(b*(c + d*x))
/(b*c - a*d)])) + 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(2*b^3*g)
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^2i^2x^2 + 2\,Acdi^2x + Ac^2i^2 + \left(Bd^2i^2x^2 + 2\,Bcdi^2x + Bc^2i^2\right)\log\left(\frac{bex+ae}{dx+c}\right)}{bgx + ag}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorit
hm="fricas")
```

```
[Out] integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*
c*d*i^2*x + B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/(b*g*x + a*g), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2\left(B\log\left(\frac{(bx+a)e}{dx+c}\right) + A\right)}{bgx + ag}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorit
hm="giac")
```

```
[Out] integrate((d*i*x + c*i)^2*(B*log((b*x + a)*e/(d*x + c)) + A)/(b*g*x + a*g),
 x)
```

maple [B] time = 0.15, size = 2538, normalized size = 9.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g),x)
```

```
[Out] 1/2*B*i^2/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b*c^2+A*i^2/g/b*ln(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)*c^2+3/2*B*i^2/g/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
d)*c^2-B*i^2/g/b*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c^2-A*i
^2/g/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2-e*A*i^2/g/(1/(d*x+c)*a*
d*e-1/(d*x+c)*b*c*e)*c^2+1/2*e*B*i^2/g/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^
2+2*d^3*e^2*B*i^2/g/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)^2*a^3/(d*x+c)^2*c-3*d^2*e^2*B*i^2/g/b*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2/(d*x+c)^2*c^2-3*d*e*B*i^2
/g/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a/(d
*x+c)*c^2+3*d^2*e*B*i^2/g/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*
d*e-1/(d*x+c)*b*c*e)*a^2/(d*x+c)*c-d^3*e*B*i^2/g/b^3*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3/(d*x+c)-1/2*d^4*e^2*B*i^2/g
/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^
4/(d*x+c)^2+2*d*e*B*i^2/g/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*
e-1/(d*x+c)*b*c*e)*c*a+2*d*e^2*B*i^2/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(
d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a/(d*x+c)^2*c^3+2*d*e*A*i^2/g/b/(1/(d*x+c)*
a*d*e-1/(d*x+c)*b*c*e)*c*a+1/2*d^2*e*B*i^2/g/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)
*b*c*e)*a^2+1/2*d^2*e^2*B*i^2/g/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c
)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2-d*e*B*i^2/g/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c
*e)*a*c+d^2*A*i^2/g/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a^2-d^2*e*B*i^2/g/b
^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2+1/
2*d^2*B*i^2/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^3*a^2-B*i^2/g/b*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c^2-
d^2*A*i^2/g/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2+1/2*e^2*A*i^2/
g/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2*b-e*B*i^2/g*ln(b/d*e+(a*d-b*c)/(d
```

```
*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2-d^2*B*i^2/g/b^3*dilog(-(-b
*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2+3/2*d^2*B*i^2/g/b^3*ln(-b*e+(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2-1/2*e^2*B*i^2/g*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^4/(d*x+c)^2*b+2*d*B*i^2/g/b^2
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)
/b/e)*a*c-d*e^2*B*i^2/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)^2*a*c+1/2*d^2*e^2*A*i^2/g/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e
)^2*a^2-d*B*i^2/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^2*a*c+2*d*A*i^2/g/b^2
*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c*a+2*d*B*i^2/g/b^2*dilog(-(-b*e+
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c*a-d^2*e*A*i^2/g/b^2/(1/(d*x+c)*a*d*
e-1/(d*x+c)*b*c*e)*a^2-d^2*B*i^2/g/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-
(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2-3*d*B*i^2/g/b^2*ln(-b*e+(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a*c-2*d*A*i^2/g/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*c*a+1/2*e^2*B*i^2/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e
-1/(d*x+c)*b*c*e)^2*c^2*b-d*e^2*A*i^2/g/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2
*c*a+e*B*i^2/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b
*c*e)*c^3/(d*x+c)
```

maxima [A] time = 1.80, size = 518, normalized size = 1.88

$$2\,Acdi^2\left(\frac{x}{bg}-\frac{a\log\left(bx+a\right)}{b^2g}\right)+\frac{1}{2}\,Ad^2i^2\left(\frac{2\,a^2\log\left(bx+a\right)}{b^3g}+\frac{bx^2-2\,ax}{b^2g}\right)+\frac{Ac^2i^2\log\left(bgx+ag\right)}{bg}-\frac{\left(3\,bc^2i^2-2\,ac\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorit
hm="maxima")
```

```
[Out] 2*A*c*d*i^2*(x/(b*g) - a*log(b*x + a)/(b^2*g)) + 1/2*A*d^2*i^2*(2*a^2*log(b
*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A*c^2*i^2*log(b*g*x + a*g)/(b*
g) - 1/2*(3*b*c^2*i^2 - 2*a*c*d*i^2)*B*log(d*x + c)/(b^2*g) + (b^2*c^2*i^2
- 2*a*b*c*d*i^2 + a^2*d^2*i^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d)
+ 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^3*g) + 1/2*(B*b^2*d^2*i^2*x^
2*log(e) + (b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*B*log(b*x + a)^2 + (
(4*i^2*log(e) - i^2)*b^2*c*d - (2*i^2*log(e) - i^2)*a*b*d^2)*B*x + (B*b^2*d
^2*i^2*x^2 + 2*(2*b^2*c*d*i^2 - a*b*d^2*i^2)*B*x + (2*b^2*c^2*i^2*log(e) -
4*(i^2*log(e) - i^2)*a*b*c*d + (2*i^2*log(e) - 3*i^2)*a^2*d^2)*B)*log(b*x +
 a) - (B*b^2*d^2*i^2*x^2 + 2*(2*b^2*c*d*i^2 - a*b*d^2*i^2)*B*x + 2*(b^2*c^2
*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*B*log(b*x + a))*log(d*x + c))/(b^3*g)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,i+d\,i\,x\right)}^2\,\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}{a\,g+b\,g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x),x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x), x
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{i^2\left(\int\frac{Ac^2}{a+bx}\,dx+\int\frac{Ad^2x^2}{a+bx}\,dx+\int\frac{Bc^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{a+bx}\,dx+\int\frac{2Acdx}{a+bx}\,dx+\int\frac{Bd^2x^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{a+bx}\,dx+\int\frac{2Bcdx\log\left(\frac{ae}{c+dx}+\frac{be}{c+}\right.}{a+bx}\right.}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x)
```

```
[Out] i**2*(Integral(A*c**2/(a + b*x), x) + Integral(A*d**2*x**2/(a + b*x), x) +
Integral(B*c**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x) + Integr
al(2*A*c*d*x/(a + b*x), x) + Integral(B*d**2*x**2*log(a*e/(c + d*x) + b*e*x
/(c + d*x))/(a + b*x), x) + Integral(2*B*c*d*x*log(a*e/(c + d*x) + b*e*x/(c
 + d*x))/(a + b*x), x))/g
```

3.15 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=247

$$\frac{d^2i^2(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^2}-\frac{2di^2(bc-ad)\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^2}-\frac{i^2(c+dx)(bc-ad)\left(B\right.}{b^2g^2(a}$$

```
[Out] -B*(-a*d+b*c)*i^2*(d*x+c)/b^2/g^2/(b*x+a)+d^2*i^2*(b*x+a)*(A+B*ln(e*(b*x+a)
/(d*x+c)))/b^3/g^2-(-a*d+b*c)*i^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2/g
^2/(b*x+a)-B*d*(-a*d+b*c)*i^2*ln(d*x+c)/b^3/g^2-2*d*(-a*d+b*c)*i^2*(A+B*ln(
e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^2+2*B*d*(-a*d+b*c)*i^2*
polylog(2,b*(d*x+c)/d/(b*x+a))/b^3/g^2
```

Rubi [A] time = 0.52, antiderivative size = 313, normalized size of antiderivative = 1.27, number of steps used = 18, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{2Bdi^2(bc-ad)\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^3g^2}+\frac{2di^2(bc-ad)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^2}-\frac{i^2(bc-ad)^2\left(B\log\left(\frac{e(a}{c-}\right.\right.}{b^3g^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^2,
x]
```

```
[Out] (A*d^2*i^2*x)/(b^2*g^2) - (B*(b*c - a*d)^2*i^2)/(b^3*g^2*(a + b*x)) - (B*d*
(b*c - a*d)*i^2*Log[a + b*x])/(b^3*g^2) - (B*d*(b*c - a*d)*i^2*Log[a + b*x]
^2)/(b^3*g^2) + (B*d^2*i^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(b^3*g^2
) - ((b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^3*g^2*(a +
b*x)) + (2*d*(b*c - a*d)*i^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x
)]))/(b^3*g^2) + (2*B*d*(b*c - a*d)*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c
 - a*d)])/(b^3*g^2) + (2*B*d*(b*c - a*d)*i^2*PolyLog[2, -((d*(a + b*x))/(b*
c - a*d))])/(b^3*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(15c+15dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^2}\,dx = \int\left(\frac{225d^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^2}+\frac{225(bc-ad)^2\left(A+B\log\left(\frac{e(a+\ldots}{c+d\ldots}\right.\right.}{b^2g^2(a+bx)^2}\right.$$

$$=\frac{\left(225d^2\right)\int\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{b^2g^2}+\frac{(450d(bc-ad))\int\frac{A+B\log\left(\frac{e\ldots}{\ldots}\right.}{a+bx}}{b^2g^2}$$

$$=\frac{225Ad^2x}{b^2g^2}-\frac{225(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^2(a+bx)}+\frac{450d(bc-ad)\ldots}{\ldots}$$

$$=\frac{225Ad^2x}{b^2g^2}+\frac{225Bd^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g^2}-\frac{225(bc-ad)^2\left(A+B\ldots\right.}{b^3g^2(a+b\ldots}$$

$$=\frac{225Ad^2x}{b^2g^2}+\frac{225Bd^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g^2}-\frac{225(bc-ad)^2\left(A+B\ldots\right.}{b^3g^2(a+b\ldots}$$

$$=\frac{225Ad^2x}{b^2g^2}-\frac{225B(bc-ad)^2}{b^3g^2(a+bx)}-\frac{225Bd(bc-ad)\log(a+bx)}{b^3g^2}+\frac{225\ldots}{\ldots}$$

$$=\frac{225Ad^2x}{b^2g^2}-\frac{225B(bc-ad)^2}{b^3g^2(a+bx)}-\frac{225Bd(bc-ad)\log(a+bx)}{b^3g^2}+\frac{225\ldots}{\ldots}$$

$$=\frac{225Ad^2x}{b^2g^2}-\frac{225B(bc-ad)^2}{b^3g^2(a+bx)}-\frac{225Bd(bc-ad)\log(a+bx)}{b^3g^2}-225\ldots$$

$$=\frac{225Ad^2x}{b^2g^2}-\frac{225B(bc-ad)^2}{b^3g^2(a+bx)}-\frac{225Bd(bc-ad)\log(a+bx)}{b^3g^2}-225\ldots$$

Mathematica [A] time = 0.23, size = 221, normalized size = 0.89

$$\frac{i^2\left(2d(bc-ad)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-\frac{(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{a+bx}+Bd^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)+Bd(ad-\ldots\right.}{b\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x)^2,x]
```

```
[Out] (i^2*(A*b*d^2*x - (B*(b*c - a*d)^2)/(a + b*x) + B*d*(-(b*c) + a*d)*Log[a +
b*x] + B*d^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - ((b*c - a*d)^2*(A + B
*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x) + 2*d*(b*c - a*d)*Log[a + b*x]*(A
 + B*Log[(e*(a + b*x))/(c + d*x)]) + B*d*(-(b*c) + a*d)*(Log[a + b*x]*(Log[
a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(
-(b*c) + a*d)])))/(b^3*g^2)
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^2i^2x^2 + 2\,Acdi^2x + Ac^2i^2 + \left(Bd^2i^2x^2 + 2\,Bcdi^2x + Bc^2i^2\right)\log\left(\frac{bex+ae}{dx+c}\right)}{b^2g^2x^2 + 2\,abg^2x + a^2g^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algor
ithm="fricas")
```

```
[Out] integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*
c*d*i^2*x + B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/(b^2*g^2*x^2 + 2*a*b*g
^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.14, size = 1465, normalized size = 5.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2,x)
```

```
[Out] d*e*i^2/g^2*B/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*
b*c*e)/(d*x+c)*c^2+d^3*e*i^2/g^2*B/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(
d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a^2-d*e*i^2/g^2*A/b/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)*c+d^2*e*i^2/g^2*A/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a-
2*d^2*e*i^2/g^2*B/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d
*x+c)*b*c*e)/(d*x+c)*a*c+d*e*i^2/g^2*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
+b/d*e)*a+d*e*i^2/g^2*A/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d^2
*i^2/g^2*B/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*d)/b/e)*a-2*d*i^2/g^2*B/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(
-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c-e*i^2/g^2*B/b/(1/(d*x+c)*a*e
-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+d*e*i^2/g^2*B/b
^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
a+d^2*e*i^2/g^2*B/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d
*x+c)*b*c*e)*a-d*e*i^2/g^2*B/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a
*d*e-1/(d*x+c)*b*c*e)*c-2*d*i^2/g^2*A/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/
d*e)*d)*c-e*i^2/g^2*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-e*i^2/g^2
*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-d^2*i^2/g^2*B/b^3*ln(-b*e+(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+d*i^2/g^2*B/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*d)*c-d^2*i^2/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^3*a+d*i^
2/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^2*c-2*d^2*i^2/g^2*A/b^3*ln(b/d*
e+(a*d-b*c)/(d*x+c)/d*e)*a+2*d^2*i^2/g^2*B/b^3*dilog(-(-b*e+(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)*d)/b/e)*a-2*d*i^2/g^2*B/b^2*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d
*x+c)/d*e)*d)/b/e)*c+2*d*i^2/g^2*A/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2*
d^2*i^2/g^2*A/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a
```

maxima [B] time = 1.91, size = 992, normalized size = 4.02

$$-A\left(\frac{a^2}{b^4g^2x + ab^3g^2} - \frac{x}{b^2g^2} + \frac{2\,a\log(bx+a)}{b^3g^2}\right)d^2i^2 + 2\,Acdi^2\left(\frac{a}{b^3g^2x + ab^2g^2} + \frac{\log(bx+a)}{b^2g^2}\right) - Bc^2i^2\left(\frac{\log\left(\frac{bex}{dx+c} + \cdots\right.}{b^2g^2x + abg\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algor
ithm="maxima")
```

```
[Out] -A*(a^2/(b^4*g^2*x + a*b^3*g^2) - x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g^2))
*d^2*i^2 + 2*A*c*d*i^2*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2))
 - B*c^2*i^2*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^2*g^2*x + a*b*g^2) +
1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*log(d*x
+ c)/((b^2*c - a*b*d)*g^2)) - A*c^2*i^2/(b^2*g^2*x + a*b*g^2) - (b^2*c^2*d*
i^2 + a*b*c*d^2*i^2 - a^2*d^3*i^2)*B*log(d*x + c)/(b^4*c*g^2 - a*b^3*d*g^2)
 + ((b^3*c*d^2*i^2*log(e) - a*b^2*d^3*i^2*log(e))*B*x^2 + (a*b^2*c*d^2*i^2*
log(e) - a^2*b*d^3*i^2*log(e))*B*x + ((b^3*c^2*d*i^2 - 2*a*b^2*c*d^2*i^2 +
a^2*b*d^3*i^2)*B*x + (a*b^2*c^2*d*i^2 - 2*a^2*b*c*d^2*i^2 + a^3*d^3*i^2)*B)
*log(b*x + a)^2 + (2*(i^2*log(e) + i^2)*a*b^2*c^2*d - 3*(i^2*log(e) + i^2)*
a^2*b*c*d^2 + (i^2*log(e) + i^2)*a^3*d^3)*B + ((b^3*c*d^2*i^2 - a*b^2*d^3*i
^2)*B*x^2 + (2*b^3*c^2*d*i^2*log(e) - 4*(i^2*log(e) - i^2)*a*b^2*c*d^2 + (2
*i^2*log(e) - 3*i^2)*a^2*b*d^3)*B*x - (4*a^2*b*c*d^2*i^2*log(e) - 2*(i^2*lo
g(e) + i^2)*a*b^2*c^2*d - (2*i^2*log(e) - i^2)*a^3*d^3)*B)*log(b*x + a) - (
(b^3*c*d^2*i^2 - a*b^2*d^3*i^2)*B*x^2 + (a*b^2*c*d^2*i^2 - a^2*b*d^3*i^2)*B
*x + (2*a*b^2*c^2*d*i^2 - 3*a^2*b*c*d^2*i^2 + a^3*d^3*i^2)*B + 2*((b^3*c^2*
d*i^2 - 2*a*b^2*c*d^2*i^2 + a^2*b*d^3*i^2)*B*x + (a*b^2*c^2*d*i^2 - 2*a^2*b
*c*d^2*i^2 + a^3*d^3*i^2)*B)*log(b*x + a))*log(d*x + c))/(a*b^4*c*g^2 - a^2
*b^3*d*g^2 + (b^5*c*g^2 - a*b^4*d*g^2)*x) + 2*(b*c*d*i^2 - a*d^2*i^2)*(log(
b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a
*d)))*B/(b^3*g^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)}{{\left(a\,g+b\,g\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2,
x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**2,x)
```

```
[Out] Timed out
```

3.16 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^3}\,dx$

Optimal. Leaf size=230

$$-\frac{d^2i^2\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^3}-\frac{di^2(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g^3(a+bx)}-\frac{i^2(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2bg^3(a+bx)^2}$$

```
[Out] -B*d*i^2*(d*x+c)/b^2/g^3/(b*x+a)-1/4*B*i^2*(d*x+c)^2/b/g^3/(b*x+a)^2-d*i^2*
(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2/g^3/(b*x+a)-1/2*i^2*(d*x+c)^2*(A+B*
ln(e*(b*x+a)/(d*x+c)))/b/g^3/(b*x+a)^2-d^2*i^2*(A+B*ln(e*(b*x+a)/(d*x+c)))*
ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^3+B*d^2*i^2*polylog(2,b*(d*x+c)/d/(b*x+a))/
b^3/g^3
```

Rubi [A] time = 0.59, antiderivative size = 338, normalized size of antiderivative = 1.47, number of steps used = 19, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^2i^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^3g^3}+\frac{d^2i^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^3}-\frac{2di^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^3(a+bx)}-\frac{i^2(bc-}{}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^3,
x]
```

```
[Out] -(B*(b*c - a*d)^2*i^2)/(4*b^3*g^3*(a + b*x)^2) - (3*B*d*(b*c - a*d)*i^2)/(2
*b^3*g^3*(a + b*x)) - (3*B*d^2*i^2*Log[a + b*x])/(2*b^3*g^3) - (B*d^2*i^2*L
og[a + b*x]^2)/(2*b^3*g^3) - ((b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c
 + d*x)]))/(2*b^3*g^3*(a + b*x)^2) - (2*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a
+ b*x))/(c + d*x)]))/(b^3*g^3*(a + b*x)) + (d^2*i^2*Log[a + b*x]*(A + B*Log
[(e*(a + b*x))/(c + d*x)]))/(b^3*g^3) + (3*B*d^2*i^2*Log[c + d*x])/(2*b^3*g
^3) + (B*d^2*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g^3) + (
B*d^2*i^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
```

```
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(16c+16dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^3}\,dx = \int \left(\frac{256(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^3(a+bx)^3} + \frac{512d(bc-ad)\left(A+B\log\right.}{b^2g^3(a+bx)^2}\right.$$

$$= \frac{\left(256d^2\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}\,dx}{b^2g^3} + \frac{(512d(bc-ad))\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2}\,dx}{b^2g^3} +$$

$$= -\frac{128(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^3(a+bx)^2} - \frac{512d(bc-ad)\left(A+B\log\left(\frac{e(}{c}\right.\right.}{b^3g^3(a+bx)}$$

$$= -\frac{128(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^3(a+bx)^2} - \frac{512d(bc-ad)\left(A+B\log\left(\frac{e(}{c}\right.\right.}{b^3g^3(a+bx)}$$

$$= -\frac{128(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^3(a+bx)^2} - \frac{512d(bc-ad)\left(A+B\log\left(\frac{e(}{c}\right.\right.}{b^3g^3(a+bx)}$$

$$= -\frac{64B(bc-ad)^2}{b^3g^3(a+bx)^2} - \frac{384Bd(bc-ad)}{b^3g^3(a+bx)} - \frac{384Bd^2\log(a+bx)}{b^3g^3} - \frac{128(bc-}{}$$

$$= -\frac{64B(bc-ad)^2}{b^3g^3(a+bx)^2} - \frac{384Bd(bc-ad)}{b^3g^3(a+bx)} - \frac{384Bd^2\log(a+bx)}{b^3g^3} - \frac{128(bc-}{}$$

$$= -\frac{64B(bc-ad)^2}{b^3g^3(a+bx)^2} - \frac{384Bd(bc-ad)}{b^3g^3(a+bx)} - \frac{384Bd^2\log(a+bx)}{b^3g^3} - \frac{128Bd^2\,l}{b}$$

$$= -\frac{64B(bc-ad)^2}{b^3g^3(a+bx)^2} - \frac{384Bd(bc-ad)}{b^3g^3(a+bx)} - \frac{384Bd^2\log(a+bx)}{b^3g^3} - \frac{128Bd^2\,l}{b}$$

Mathematica [A] time = 0.31, size = 244, normalized size = 1.06

$$\frac{i^2\left(4d^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) + \frac{8d(ad-bc)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{a+bx} - \frac{2(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{(a+bx)^2} - 2Bd^2\left(\log(a+bx)\right.\right.}{4b^3g}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x)^3,x]
```

```
[Out] (i^2*(-((B*(b*c - a*d)^2)/(a + b*x)^2) + (6*B*d*(-(b*c) + a*d))/(a + b*x) -
 6*B*d^2*Log[a + b*x] - (2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)
]))/(a + b*x)^2 + (8*d*(-(b*c) + a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))
/(a + b*x) + 4*d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*B*
d^2*Log[c + d*x] - 2*B*d^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x)
)/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(4*b^3*g^3)
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^2i^2x^2 + 2\,Acdi^2x + Ac^2i^2 + \left(Bd^2i^2x^2 + 2\,Bcdi^2x + Bc^2i^2\right)\log\left(\frac{bex+ae}{dx+c}\right)}{b^3g^3x^3 + 3\,ab^2g^3x^2 + 3\,a^2bg^3x + a^3g^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algor
ithm="fricas")
```

```
[Out] integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*
c*d*i^2*x + B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/(b^3*g^3*x^3 + 3*a*b^2
*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 1495, normalized size = 6.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3,x)
```

```
[Out] -d^3*i^2/(a*d-b*c)/g^3*A/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+d^2
*i^2/(a*d-b*c)/g^3*A/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-1/2*d*e
^2*i^2/(a*d-b*c)/g^3*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+1/2*e^
2*i^2/(a*d-b*c)/g^3*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-d^2*e*i^2
/(a*d-b*c)/g^3*A/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+d*e*i^2/(a*d
-b*c)/g^3*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+d^3*i^2/(a*d-b*c)/g
^3*A/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-d^2*i^2/(a*d-b*c)/g^3*A/b^2*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^2*e*i^2/(a*d-b*c)/g^3*B/b^2/(1/(d*x+c)*a*e-
1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d*e*i^2/(a*d-b*c
)/g^3*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*c-d^2*e*i^2/(a*d-b*c)/g^3*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)*a+d*e*i^2/(a*d-b*c)/g^3*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-d
^3*i^2/(a*d-b*c)/g^3*B/b^3*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/
e)*a+d^2*i^2/(a*d-b*c)/g^3*B/b^2*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
*d)/b/e)*c-d^3*i^2/(a*d-b*c)/g^3*B/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-
(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+d^2*i^2/(a*d-b*c)/g^3*B/b^2*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b
/e)*c-1/2*d*e^2*i^2/(a*d-b*c)/g^3*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/2*e^2*i^2/(a*d-b*c)/g^3*B/(1/(d*x+
c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/4*d*e
^2*i^2/(a*d-b*c)/g^3*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+1/4*e^
2*i^2/(a*d-b*c)/g^3*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+1/2*d^3*i
^2/(a*d-b*c)/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^3*a-1/2*d^2*i^2/(a*d
-b*c)/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^2*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}Bd^2i^2\left(\frac{\left(4\,abx+3\,a^2+2\left(b^2x^2+2\,abx+a^2\right)\log\left(bx+a\right)\right)\log\left(dx+c\right)}{b^5g^3x^2+2\,ab^4g^3x+a^2b^3g^3}-2\int\frac{2\,b^3dx^3\log(e)+7\,a^2bdx+3\,a}{2\left(b^6dg^3x^4+a^3b^3\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algor
ithm="maxima")
```

```
[Out] -1/2*B*d^2*i^2*((4*a*b*x + 3*a^2 + 2*(b^2*x^2 + 2*a*b*x + a^2)*log(b*x + a)
)*log(d*x + c)/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) - 2*integrate(1/
2*(2*b^3*d*x^3*log(e) + 7*a^2*b*d*x + 3*a^3*d + 2*(b^3*c*log(e) + 2*a*b^2*d
)*x^2 + 2*(2*b^3*d*x^3 + 3*a^2*b*d*x + a^3*d + (b^3*c + 3*a*b^2*d)*x^2)*log
(b*x + a))/(b^6*d*g^3*x^4 + a^3*b^3*c*g^3 + (b^6*c*g^3 + 3*a*b^5*d*g^3)*x^3
 + 3*(a*b^5*c*g^3 + a^2*b^4*d*g^3)*x^2 + (3*a^2*b^4*c*g^3 + a^3*b^3*d*g^3)*
x), x)) - 1/2*B*c*d*i^2*(2*(2*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))
/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + (3*a*b*c - a^2*d + 2*(2*b^2*
c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x +
(a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 -
 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c
^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3)) + 1/2*A*d^2*i^2*((4*a*b*x + 3*a^2)/(b
^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*log(b*x + a)/(b^3*g^3)) + 1/4
*B*c^2*i^2*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c
 - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) - 2*log(b*e*x/(d*x + c) +
a*e/(d*x + c))/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) + 2*d^2*log(b*x +
a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)/((b^3*c^2
 - 2*a*b^2*c*d + a^2*b*d^2)*g^3)) - (2*b*x + a)*A*c*d*i^2/(b^4*g^3*x^2 + 2*
a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*A*c^2*i^2/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a
^2*b*g^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)}{{\left(a\,g+b\,g\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^3,
x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^3,
 x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{i^2\left(\int \frac{Ac^2}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx + \int \frac{Ad^2x^2}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx + \int \frac{Bc^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx + \int \frac{2Acdx}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx + \int \frac{}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3,x)
```

```
[Out] i**2*(Integral(A*c**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) +
 Integral(A*d**2*x**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) +
 Integral(B*c**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a**3 + 3*a**2*b*x +
3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*A*c*d*x/(a**3 + 3*a**2*b*x + 3*
a*b**2*x**2 + b**3*x**3), x) + Integral(B*d**2*x**2*log(a*e/(c + d*x) + b*e
*x/(c + d*x))/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integra
l(2*B*c*d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a**3 + 3*a**2*b*x + 3*a*b
**2*x**2 + b**3*x**3), x))/g**3
```

3.17 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^4} dx$

Optimal. Leaf size=89

$$-\frac{i^2(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3g^4(a+bx)^3(bc-ad)}-\frac{Bi^2(c+dx)^3}{9g^4(a+bx)^3(bc-ad)}$$

```
[Out] -1/9*B*i^2*(d*x+c)^3/(-a*d+b*c)/g^4/(b*x+a)^3-1/3*i^2*(d*x+c)^3*(A+B*ln(e*(
b*x+a)/(d*x+c)))/(-a*d+b*c)/g^4/(b*x+a)^3
```

Rubi [B] time = 0.49, antiderivative size = 287, normalized size of antiderivative = 3.22, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2528, 2525, 12, 44}

$$-\frac{d^2i^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^4(a+bx)}-\frac{di^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^4(a+bx)^2}-\frac{i^2(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^3g^4(a+bx)^3}-\frac{Bd^3i^2\log(}{3b^3g^4(bc}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^4,
x]
```

```
[Out] -(B*(b*c - a*d)^2*i^2)/(9*b^3*g^4*(a + b*x)^3) - (B*d*(b*c - a*d)*i^2)/(3*b
^3*g^4*(a + b*x)^2) - (B*d^2*i^2)/(3*b^3*g^4*(a + b*x)) - (B*d^3*i^2*Log[a
+ b*x])/(3*b^3*(b*c - a*d)*g^4) - ((b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(3*b^3*g^4*(a + b*x)^3) - (d*(b*c - a*d)*i^2*(A + B*Log[(e*
(a + b*x))/(c + d*x)]))/(b^3*g^4*(a + b*x)^2) - (d^2*i^2*(A + B*Log[(e*(a +
 b*x))/(c + d*x)]))/(b^3*g^4*(a + b*x)) + (B*d^3*i^2*Log[c + d*x])/(3*b^3*(
b*c - a*d)*g^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(17c+17dx)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^4}\,dx = \int \left(\frac{289(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^4(a+bx)^4} + \frac{578d(bc-ad)\left(A+B\log\right.}{b^2g^4(a+bx)^3}\right.$$

$$= \frac{\left(289d^2\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2}\,dx}{b^2g^4} + \frac{(578d(bc-ad))\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^3}\,dx}{b^2g^4} +$$

$$= -\frac{289(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^3g^4(a+bx)^3} - \frac{289d(bc-ad)\left(A+B\log\left(\frac{e(}{c}\right.\right.}{b^3g^4(a+bx)^2}$$

$$= -\frac{289(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^3g^4(a+bx)^3} - \frac{289d(bc-ad)\left(A+B\log\left(\frac{e(}{c}\right.\right.}{b^3g^4(a+bx)^2}$$

$$= -\frac{289(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^3g^4(a+bx)^3} - \frac{289d(bc-ad)\left(A+B\log\left(\frac{e(}{c}\right.\right.}{b^3g^4(a+bx)^2}$$

$$= -\frac{289B(bc-ad)^2}{9b^3g^4(a+bx)^3} - \frac{289Bd(bc-ad)}{3b^3g^4(a+bx)^2} - \frac{289Bd^2}{3b^3g^4(a+bx)} - \frac{289Bd^3\log(a}{3b^3(bc-a}$$

Mathematica [B] time = 0.30, size = 315, normalized size = 3.54

$$-\frac{i^2\left(-3a^3Ad^3 - 3a^3Bd^3\log(c+dx) - a^3Bd^3 - 9a^2Abd^3x + 3B(bc-ad)\left(a^2d^2 + abd(c+3dx) + b^2\left(c^2 + 3cdx + 3\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x)^4,x]
```

```
[Out] -1/9*(i^2*(3*A*b^3*c^3 + b^3*B*c^3 - 3*a^3*A*d^3 - a^3*B*d^3 + 9*A*b^3*c^2*
d*x + 3*b^3*B*c^2*d*x - 9*a^2*A*b*d^3*x - 3*a^2*b*B*d^3*x + 9*A*b^3*c*d^2*x
^2 + 3*b^3*B*c*d^2*x^2 - 9*a*A*b^2*d^3*x^2 - 3*a*b^2*B*d^3*x^2 + 3*B*d^3*(a
 + b*x)^3*Log[a + b*x] + 3*B*(b*c - a*d)*(a^2*d^2 + a*b*d*(c + 3*d*x) + b^2
*(c^2 + 3*c*d*x + 3*d^2*x^2))*Log[(e*(a + b*x))/(c + d*x)] - 3*a^3*B*d^3*Lo
g[c + d*x] - 9*a^2*b*B*d^3*x*Log[c + d*x] - 9*a*b^2*B*d^3*x^2*Log[c + d*x]
- 3*b^3*B*d^3*x^3*Log[c + d*x]))/(b^3*(b*c - a*d)*g^4*(a + b*x)^3)
```

fricas [B] time = 0.74, size = 271, normalized size = 3.04

$$-\frac{3\left((3A+B)b^3cd^2 - (3A+B)ab^2d^3\right)i^2x^2 + 3\left((3A+B)b^3c^2d - (3A+B)a^2bd^3\right)i^2x + \left((3A+B)b^3c^3 - (3A+B\right.}{9\left(\left(b^7c - ab^6d\right)g^4x^3 + 3\left(ab^6c - a^2b^5d\right)g^4x^2 + 3\left(a^2b^5c - a^3b^4d\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algor
ithm="fricas")
```

```
[Out] -1/9*(3*((3*A + B)*b^3*c*d^2 - (3*A + B)*a*b^2*d^3)*i^2*x^2 + 3*((3*A + B)*
b^3*c^2*d - (3*A + B)*a^2*b*d^3)*i^2*x + ((3*A + B)*b^3*c^3 - (3*A + B)*a^3
*d^3)*i^2 + 3*(B*b^3*d^3*i^2*x^3 + 3*B*b^3*c*d^2*i^2*x^2 + 3*B*b^3*c^2*d*i^
2*x + B*b^3*c^3*i^2)*log((b*e*x + a*e)/(d*x + c)))/((b^7*c - a*b^6*d)*g^4*x
^3 + 3*(a*b^6*c - a^2*b^5*d)*g^4*x^2 + 3*(a^2*b^5*c - a^3*b^4*d)*g^4*x + (a
^3*b^4*c - a^4*b^3*d)*g^4)
```

giac [A] time = 2.30, size = 114, normalized size = 1.28

$$\frac{\left(3\,Be^4\log\left(\frac{bxe+ae}{dx+c}\right)+3\,Ae^4+Be^4\right)(dx+c)^3\left(\frac{bc}{(bce-ade)(bc-ad)}-\frac{ad}{(bce-ade)(bc-ad)}\right)}{9\,(bxe+ae)^3g^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algor
ithm="giac")
```

```
[Out] 1/9*(3*B*e^4*log((b*x*e + a*e)/(d*x + c)) + 3*A*e^4 + B*e^4)*(d*x + c)^3*(b
*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x
*e + a*e)^3*g^4)
```

maple [B] time = 0.05, size = 406, normalized size = 4.56

$$\frac{Bad\,e^3i^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{3\,(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^3g^4}-\frac{Bbc\,e^3i^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{3\,(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^3g^4}+\frac{Aad\,e^3i^2}{3\,(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4,x)
```

```
[Out] 1/3*d*e^3*i^2/(a*d-b*c)^2/g^4*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a
-1/3*e^3*i^2/(a*d-b*c)^2/g^4*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*
c+1/3*d*e^3*i^2/(a*d-b*c)^2/g^4*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/3*e^3*i^2/(a*d-b*c)^2/g^4*B/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/9*d*e
^3*i^2/(a*d-b*c)^2/g^4*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-1/9*e^
3*i^2/(a*d-b*c)^2/g^4*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c
```

maxima [B] time = 1.63, size = 1515, normalized size = 17.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algor
ithm="maxima")
```

```
[Out] -1/18*B*d^2*i^2*(6*(3*b^2*x^2 + 3*a*b*x + a^2)*log(b*e*x/(d*x + c) + a*e/(d
*x + c))/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) +
(11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2 + 6*(3*b^4*c^2 - 3*a*b^3*c*d + a^
2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^2*c*d + 2*a^3*b*d^2)*x)/((b^8*c^2
 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*(a*b^7*c^2 - 2*a^2*b^6*c*d + a^3*
b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4*b^4*d^2)*g^4*x + (a
^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*g^4) + 6*(3*b^2*c^2*d - 3*a*b*c*d
^2 + a^2*d^3)*log(b*x + a)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^
3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(d*x + c)/((b^
6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4)) - 1/18*B*c*d*i
^2*(6*(3*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^4*x^3 + 3*a*b
^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) + (5*a*b^2*c^2 - 22*a^2*b*c*d +
 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d +
5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c
^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d
+ a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6
*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d
^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a
*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4)) - 1/18*B*c^2*i^2*((6*b^2*
```

```
d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/(
(b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*
d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^
4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*log(b*e*x/(d*x + c
) + a*e/(d*x + c))/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b
*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^
3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*
d^2 - a^3*b*d^3)*g^4)) - 1/3*(3*b*x + a)*A*c*d*i^2/(b^5*g^4*x^3 + 3*a*b^4*g
^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*(3*b^2*x^2 + 3*a*b*x + a^2)*A
*d^2*i^2/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) -
1/3*A*c^2*i^2/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4)
```

mupad [**B**] time = 6.19, size = 423, normalized size = 4.75

$$-\frac{x^2\,\left(3\,A\,b^2\,d^2\,i^2+B\,b^2\,d^2\,i^2\right)+x\,\left(3\,A\,a\,b\,d^2\,i^2+B\,a\,b\,d^2\,i^2+3\,A\,b^2\,c\,d\,i^2+B\,b^2\,c\,d\,i^2\right)+A\,a^2\,d^2\,i^2+A\,b^2\,c^2\,i^2+}{3\,a^3\,b^3\,g^4+9\,a^2\,b^4\,g^4\,x+9\,a\,b^5\,g^4\,x^2+3\,b^6\,g^4\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^4,
x)
```

```
[Out] - (x^2*(3*A*b^2*d^2*i^2 + B*b^2*d^2*i^2) + x*(3*A*a*b*d^2*i^2 + B*a*b*d^2*i
^2 + 3*A*b^2*c*d*i^2 + B*b^2*c*d*i^2) + A*a^2*d^2*i^2 + A*b^2*c^2*i^2 + (B*
a^2*d^2*i^2)/3 + (B*b^2*c^2*i^2)/3 + A*a*b*c*d*i^2 + (B*a*b*c*d*i^2)/3)/(3*
a^3*b^3*g^4 + 3*b^6*g^4*x^3 + 9*a^2*b^4*g^4*x + 9*a*b^5*g^4*x^2) - (log((e*
(a + b*x))/(c + d*x))*(a*((B*a*d^2*i^2)/(3*b^4*g^4) + (B*c*d*i^2)/(3*b^3*g^
4)) + x*(b*((B*a*d^2*i^2)/(3*b^4*g^4) + (B*c*d*i^2)/(3*b^3*g^4)) + (2*B*a*d
^2*i^2)/(3*b^3*g^4) + (2*B*c*d*i^2)/(3*b^2*g^4)) + (B*c^2*i^2)/(3*b^2*g^4)
+ (B*d^2*i^2*x^2)/(b^2*g^4)))/(3*a^2*x + a^3/b + b^2*x^3 + 3*a*b*x^2) - (B*
d^3*i^2*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*2i)/(3*b^3*g^4*(a*d - b*
c))
```

sympy [**B**] time = 26.25, size = 614, normalized size = 6.90

$$-\frac{Bd^3i^2\log\left(x+\frac{-\frac{Ba^2d^5i^2}{ad-bc}+\frac{2Babcd^4i^2}{ad-bc}+Bad^4i^2-\frac{Bb^2c^2d^3i^2}{ad-bc}+Bbcd^3i^2}{2Bbd^4i^2}\right)}{3b^3g^4\left(ad-bc\right)}+\frac{Bd^3i^2\log\left(x+\frac{\frac{Ba^2d^5i^2}{ad-bc}-\frac{2Babcd^4i^2}{ad-bc}+Bad^4i^2+\frac{Bb^2c^2d^3i^2}{ad-bc}+Bbcd^3i^2}{2Bbd^4i^2}\right)}{3b^3g^4\left(ad-bc\right)}+\frac{-3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4,x)
```

```
[Out] -B*d**3*i**2*log(x + (-B*a**2*d**5*i**2/(a*d - b*c) + 2*B*a*b*c*d**4*i**2/(
a*d - b*c) + B*a*d**4*i**2 - B*b**2*c**2*d**3*i**2/(a*d - b*c) + B*b*c*d**3
*i**2)/(2*B*b*d**4*i**2))/(3*b**3*g**4*(a*d - b*c)) + B*d**3*i**2*log(x + (
B*a**2*d**5*i**2/(a*d - b*c) - 2*B*a*b*c*d**4*i**2/(a*d - b*c) + B*a*d**4*i
**2 + B*b**2*c**2*d**3*i**2/(a*d - b*c) + B*b*c*d**3*i**2)/(2*B*b*d**4*i**2
))/(3*b**3*g**4*(a*d - b*c)) + (-3*A*a**2*d**2*i**2 - 3*A*a*b*c*d*i**2 - 3*
A*b**2*c**2*i**2 - B*a**2*d**2*i**2 - B*a*b*c*d*i**2 - B*b**2*c**2*i**2 + x
**2*(-9*A*b**2*d**2*i**2 - 3*B*b**2*d**2*i**2) + x*(-9*A*a*b*d**2*i**2 - 9*
A*b**2*c*d*i**2 - 3*B*a*b*d**2*i**2 - 3*B*b**2*c*d*i**2))/(9*a**3*b**3*g**4
 + 27*a**2*b**4*g**4*x + 27*a*b**5*g**4*x**2 + 9*b**6*g**4*x**3) + (-B*a**2
*d**2*i**2 - B*a*b*c*d*i**2 - 3*B*a*b*d**2*i**2*x - B*b**2*c**2*i**2 - 3*B*
b**2*c*d*i**2*x - 3*B*b**2*d**2*i**2*x**2)*log(e*(a + b*x)/(c + d*x))/(3*a*
*3*b**3*g**4 + 9*a**2*b**4*g**4*x + 9*a*b**5*g**4*x**2 + 3*b**6*g**4*x**3)
```

3.18 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^5}\,dx$

Optimal. Leaf size=181

$$-\frac{bi^2(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4g^5(a+bx)^4(bc-ad)^2}+\frac{di^2(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3g^5(a+bx)^3(bc-ad)^2}-\frac{bBi^2(c+dx)^4}{16g^5(a+bx)^4(bc-ad)^2}+\frac{Bdi^2(c}{9g^5(a+bx)}$$

```
[Out] 1/9*B*d*i^2*(d*x+c)^3/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/16*b*B*i^2*(d*x+c)^4/(-a
*d+b*c)^2/g^5/(b*x+a)^4+1/3*d*i^2*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a
*d+b*c)^2/g^5/(b*x+a)^3-1/4*b*i^2*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a
*d+b*c)^2/g^5/(b*x+a)^4
```

Rubi [A] time = 0.57, antiderivative size = 325, normalized size of antiderivative = 1.80, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2528, 2525, 12, 44}

$$-\frac{d^2i^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^3g^5(a+bx)^2}-\frac{2di^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^3g^5(a+bx)^3}-\frac{i^2(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4b^3g^5(a+bx)^4}+\frac{}{12b^3g^5(a}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^5,
x]
```

```
[Out] -(B*(b*c - a*d)^2*i^2)/(16*b^3*g^5*(a + b*x)^4) - (5*B*d*(b*c - a*d)*i^2)/(
36*b^3*g^5*(a + b*x)^3) - (B*d^2*i^2)/(24*b^3*g^5*(a + b*x)^2) + (B*d^3*i^2
)/(12*b^3*(b*c - a*d)*g^5*(a + b*x)) + (B*d^4*i^2*Log[a + b*x])/(12*b^3*(b*
c - a*d)^2*g^5) - ((b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/
(4*b^3*g^5*(a + b*x)^4) - (2*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c
+ d*x)]))/(3*b^3*g^5*(a + b*x)^3) - (d^2*i^2*(A + B*Log[(e*(a + b*x))/(c +
d*x)]))/(2*b^3*g^5*(a + b*x)^2) - (B*d^4*i^2*Log[c + d*x])/(12*b^3*(b*c - a
*d)^2*g^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
```

```
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(18c+18dx)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^5}\,dx = \int \left(\frac{324(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^5(a+bx)^5} + \frac{648d(bc-ad)\left(A+B\log\right.}{b^2g^5(a+bx)^4}\right.$$

$$= \frac{\left(324d^2\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^3}\,dx}{b^2g^5} + \frac{(648d(bc-ad))\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^4}\,dx}{b^2g^5} +$$

$$= -\frac{81(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^5(a+bx)^4} - \frac{216d(bc-ad)\left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{b^3g^5(a+bx)^3}$$

$$= -\frac{81(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^5(a+bx)^4} - \frac{216d(bc-ad)\left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{b^3g^5(a+bx)^3}$$

$$= -\frac{81(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^5(a+bx)^4} - \frac{216d(bc-ad)\left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{b^3g^5(a+bx)^3}$$

$$= -\frac{81B(bc-ad)^2}{4b^3g^5(a+bx)^4} - \frac{45Bd(bc-ad)}{b^3g^5(a+bx)^3} - \frac{27Bd^2}{2b^3g^5(a+bx)^2} + \frac{27Bd^3}{b^3(bc-ad)g^5}$$

Mathematica [B] time = 0.38, size = 454, normalized size = 2.51

$$-\frac{i^2\left(12a^4Ad^4 + 12a^4Bd^4\log(c+dx) + 7a^4Bd^4 + 48a^3Abd^4x + 48a^3bBd^4x\log(c+dx) + 28a^3bBd^4x + 72a^2Ab^2d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x)^5,x]
```

```
[Out] -1/144*(i^2*(36*A*b^4*c^4 + 9*b^4*B*c^4 - 48*a*A*b^3*c^3*d - 16*a*b^3*B*c^3
*d + 12*a^4*A*d^4 + 7*a^4*B*d^4 + 96*A*b^4*c^3*d*x + 20*b^4*B*c^3*d*x - 144
*a*A*b^3*c^2*d^2*x - 48*a*b^3*B*c^2*d^2*x + 48*a^3*A*b*d^4*x + 28*a^3*b*B*d
^4*x + 72*A*b^4*c^2*d^2*x^2 + 6*b^4*B*c^2*d^2*x^2 - 144*a*A*b^3*c*d^3*x^2 -
 48*a*b^3*B*c*d^3*x^2 + 72*a^2*A*b^2*d^4*x^2 + 42*a^2*b^2*B*d^4*x^2 - 12*b^
4*B*c*d^3*x^3 + 12*a*b^3*B*d^4*x^3 - 12*B*d^4*(a + b*x)^4*Log[a + b*x] + 12
*B*(b*c - a*d)^2*(a^2*d^2 + 2*a*b*d*(c + 2*d*x) + b^2*(3*c^2 + 8*c*d*x + 6*
d^2*x^2))*Log[(e*(a + b*x))/(c + d*x)] + 12*a^4*B*d^4*Log[c + d*x] + 48*a^3
*b*B*d^4*x*Log[c + d*x] + 72*a^2*b^2*B*d^4*x^2*Log[c + d*x] + 48*a*b^3*B*d^
4*x^3*Log[c + d*x] + 12*b^4*B*d^4*x^4*Log[c + d*x]))/(b^3*(b*c - a*d)^2*g^5
*(a + b*x)^4)
```

fricas [B] time = 0.73, size = 510, normalized size = 2.82

$$\frac{12\left(Bb^4cd^3 - Bab^3d^4\right)i^2x^3 - 6\left((12A+B)b^4c^2d^2 - 8(3A+B)ab^3cd^3 + (12A+7B)a^2b^2d^4\right)i^2x^2 - 4\left((24A+5B)\right.}{144\left(\left(b^9c^2 - 2ab^8cd + \right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algor
ithm="fricas")
```

```
[Out] 1/144*(12*(B*b^4*c*d^3 - B*a*b^3*d^4)*i^2*x^3 - 6*((12*A + B)*b^4*c^2*d^2 -
 8*(3*A + B)*a*b^3*c*d^3 + (12*A + 7*B)*a^2*b^2*d^4)*i^2*x^2 - 4*((24*A + 5
*B)*b^4*c^3*d - 12*(3*A + B)*a*b^3*c^2*d^2 + (12*A + 7*B)*a^3*b*d^4)*i^2*x
- (9*(4*A + B)*b^4*c^4 - 16*(3*A + B)*a*b^3*c^3*d + (12*A + 7*B)*a^4*d^4)*i
^2 + 12*(B*b^4*d^4*i^2*x^4 + 4*B*a*b^3*d^4*i^2*x^3 - 6*(B*b^4*c^2*d^2 - 2*B
*a*b^3*c*d^3)*i^2*x^2 - 4*(2*B*b^4*c^3*d - 3*B*a*b^3*c^2*d^2)*i^2*x - (3*B*
b^4*c^4 - 4*B*a*b^3*c^3*d)*i^2)*log((b*e*x + a*e)/(d*x + c)))/((b^9*c^2 - 2
*a*b^8*c*d + a^2*b^7*d^2)*g^5*x^4 + 4*(a*b^8*c^2 - 2*a^2*b^7*c*d + a^3*b^6*
d^2)*g^5*x^3 + 6*(a^2*b^7*c^2 - 2*a^3*b^6*c*d + a^4*b^5*d^2)*g^5*x^2 + 4*(a
^3*b^6*c^2 - 2*a^4*b^5*c*d + a^5*b^4*d^2)*g^5*x + (a^4*b^5*c^2 - 2*a^5*b^4*
c*d + a^6*b^3*d^2)*g^5)
```

giac [A] time = 2.95, size = 238, normalized size = 1.31

$$\frac{\left(36\,Bbe^5\log\left(\frac{bxe+ae}{dx+c}\right) - \frac{48\,(bxe+ae)Bde^4\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c} + 36\,Abe^5 + 9\,Bbe^5 - \frac{48\,(bxe+ae)Ade^4}{dx+c} - \frac{16\,(bxe+ae)Bde^4}{dx+c}\right)\left(\frac{bc}{(bce-ade)(bc-a\cdots}\right.}{144\left(\frac{(bxe+ae)^4bcg^5}{(dx+c)^4} - \frac{(bxe+ae)^4adg^5}{(dx+c)^4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algor
ithm="giac")
```

```
[Out] 1/144*(36*B*b*e^5*log((b*x*e + a*e)/(d*x + c)) - 48*(b*x*e + a*e)*B*d*e^4*l
og((b*x*e + a*e)/(d*x + c))/(d*x + c) + 36*A*b*e^5 + 9*B*b*e^5 - 48*(b*x*e
+ a*e)*A*d*e^4/(d*x + c) - 16*(b*x*e + a*e)*B*d*e^4/(d*x + c))*(b*c/((b*c*e
 - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^
4*b*c*g^5/(d*x + c)^4 - (b*x*e + a*e)^4*a*d*g^5/(d*x + c)^4)
```

maple [B] time = 0.05, size = 828, normalized size = 4.57

$$-\frac{Babd\,e^4i^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{4\,(ad-bc)^3\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^4g^5}+\frac{B\,b^2c\,e^4i^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{4\,(ad-bc)^3\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^4g^5}-\frac{Aabd\,e^4i^2}{4\,(ad-bc)^3\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^5,x)
```

```
[Out] 1/3*d^2*e^3*i^2/(a*d-b*c)^3/g^5*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3
*a-1/3*d*e^3*i^2/(a*d-b*c)^3/g^5*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
3*b*c-1/4*d*e^4*i^2/(a*d-b*c)^3/g^5*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^4*a+1/4*e^4*i^2/(a*d-b*c)^3/g^5*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
+b/d*e)^4*c+1/3*d^2*e^3*i^2/(a*d-b*c)^3/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/3*d*e^3*i^2/(a*d-b*c)^3/g^
5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*b*c+1/9*d^2*e^3*i^2/(a*d-b*c)^3/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b
/d*e)^3*a-1/9*d*e^3*i^2/(a*d-b*c)^3/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)^3*b*c-1/4*d*e^4*i^2/(a*d-b*c)^3/g^5*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c
/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/4*e^4*i^2/(a*d-b*c)^3/g^5
*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)*c-1/16*d*e^4*i^2/(a*d-b*c)^3/g^5*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
+b/d*e)^4*a+1/16*e^4*i^2/(a*d-b*c)^3/g^5*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c
/d*e+b/d*e)^4*c
```

maxima [B] time = 2.27, size = 2218, normalized size = 12.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algor
ithm="maxima")
```

```
[Out] -1/144*B*d^2*i^2*(12*(6*b^2*x^2 + 4*a*b*x + a^2)*log(b*e*x/(d*x + c) + a*e/
(d*x + c))/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g
^5*x + a^4*b^3*g^5) + (13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 -
 7*a^5*d^3 - 12*(6*b^5*c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 6*(6*b^5*
c^3 - 46*a*b^4*c^2*d + 29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3)*x^2 + 4*(10*a*b^4*
c^3 - 63*a^2*b^3*c^2*d + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x)/((b^10*c^3 - 3*
a*b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2
*b^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^
3*b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a
^4*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*
b^5*c^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b
*c*d^3 + a^2*d^4)*log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^
2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 +
 a^2*d^4)*log(d*x + c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^
3*b^4*c*d^3 + a^4*b^3*d^4)*g^5)) - 1/72*B*c*d*i^2*(12*(4*b*x + a)*log(b*e*x
/(d*x + c) + a*e/(d*x + c))/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*
x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) + (7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75
*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2
*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d +
57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c
*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*
d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c
*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*
c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d
^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*
a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*
(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*
d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5)) + 1/48*B*c^2*i^2*((12*b^3*d^3*x^
3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2
 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8
*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^
3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c
^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*
c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3
 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) - 12*log(b*e*x/(d*x
+ c) + a*e/(d*x + c))/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 +
4*a^3*b^2*g^5*x + a^4*b*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*
d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x
+ c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*
b*d^4)*g^5)) - 1/6*(4*b*x + a)*A*c*d*i^2/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6
*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12*(6*b^2*x^2 + 4*a*b
*x + a^2)*A*d^2*i^2/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*
a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/4*A*c^2*i^2/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3
 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5)
```

mupad [B] time = 6.86, size = 647, normalized size = 3.57

$$-\frac{\frac{12\,A\,a^3\,d^3\,i^2-36\,A\,b^3\,c^3\,i^2+7\,B\,a^3\,d^3\,i^2-9\,B\,b^3\,c^3\,i^2+12\,A\,a\,b^2\,c^2\,d\,i^2+12\,A\,a^2\,b\,c\,d^2\,i^2+7\,B\,a\,b^2\,c^2\,d\,i^2+7\,B\,a^2\,b\,c\,d^2\,i^2}{12\,(a\,d-b\,c)}+\frac{x^2\,(12\,A\,a\,b^2\,d^3\,i^2+7\,B\,a\,b^2\,d^3 \cdots}{2\,(a\,d \cdots}}{12\,a^4\,b^3\,g^5+48\,a^3\,b^4\,g^5\,x+72\,a^2\,b^5\,g \cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^5,
x)
```

```
[Out] - ((12*A*a^3*d^3*i^2 - 36*A*b^3*c^3*i^2 + 7*B*a^3*d^3*i^2 - 9*B*b^3*c^3*i^2
 + 12*A*a*b^2*c^2*d*i^2 + 12*A*a^2*b*c*d^2*i^2 + 7*B*a*b^2*c^2*d*i^2 + 7*B*
```

```
a^2*b*c*d^2*i^2)/(12*(a*d - b*c)) + (x^2*(12*A*a*b^2*d^3*i^2 + 7*B*a*b^2*d^
3*i^2 - 12*A*b^3*c*d^2*i^2 - B*b^3*c*d^2*i^2))/(2*(a*d - b*c)) + (x*(12*A*a
^2*b*d^3*i^2 + 7*B*a^2*b*d^3*i^2 - 24*A*b^3*c^2*d*i^2 - 5*B*b^3*c^2*d*i^2 +
 12*A*a*b^2*c*d^2*i^2 + 7*B*a*b^2*c*d^2*i^2))/(3*(a*d - b*c)) + (B*b^3*d^3*
i^2*x^3)/(a*d - b*c))/(12*a^4*b^3*g^5 + 12*b^7*g^5*x^4 + 48*a^3*b^4*g^5*x +
 48*a*b^6*g^5*x^3 + 72*a^2*b^5*g^5*x^2) - (log((e*(a + b*x))/(c + d*x))*(a*
((B*a*d^2*i^2)/(12*b^4*g^5) + (B*c*d*i^2)/(6*b^3*g^5)) + x*(b*((B*a*d^2*i^2
)/(12*b^4*g^5) + (B*c*d*i^2)/(6*b^3*g^5)) + (B*a*d^2*i^2)/(4*b^3*g^5) + (B*
c*d*i^2)/(2*b^2*g^5)) + (B*c^2*i^2)/(4*b^2*g^5) + (B*d^2*i^2*x^2)/(2*b^2*g^
5)))/(4*a^3*x + a^4/b + b^3*x^4 + 6*a^2*b*x^2 + 4*a*b^2*x^3) - (B*d^4*i^2*a
tanh((12*b^5*c^2*g^5 - 12*a^2*b^3*d^2*g^5)/(12*b^3*g^5*(a*d - b*c)^2) - (2*
b*d*x)/(a*d - b*c)))/(6*b^3*g^5*(a*d - b*c)^2)
```

sympy [B] time = 47.65, size = 928, normalized size = 5.13

$$-\frac{Bd^4i^2\log\left(x+\frac{-\frac{Ba^3d^7i^2}{(ad-bc)^2}+\frac{3Ba^2bcd^6i^2}{(ad-bc)^2}-\frac{3Bab^2c^2d^5i^2}{(ad-bc)^2}+Bad^5i^2+\frac{Bb^3c^3d^4i^2}{(ad-bc)^2}+Bbcd^4i^2}{2Bbd^5i^2}\right)}{12b^3g^5(ad-bc)^2}+\frac{Bd^4i^2\log\left(x+\frac{\frac{Ba^3d^7i^2}{(ad-bc)^2}-\frac{3Ba^2bcd^6i^2}{(ad-bc)^2}+\frac{3Bab^2c^2d^5i^2}{(ad-bc)^2}+B}{2Bbd^5i^2}\right.}{12b^3g^5(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**5,x)
```

```
[Out] -B*d**4*i**2*log(x + (-B*a**3*d**7*i**2/(a*d - b*c)**2 + 3*B*a**2*b*c*d**6*
i**2/(a*d - b*c)**2 - 3*B*a*b**2*c**2*d**5*i**2/(a*d - b*c)**2 + B*a*d**5*i
**2 + B*b**3*c**3*d**4*i**2/(a*d - b*c)**2 + B*b*c*d**4*i**2)/(2*B*b*d**5*i
**2))/(12*b**3*g**5*(a*d - b*c)**2) + B*d**4*i**2*log(x + (B*a**3*d**7*i**2
/(a*d - b*c)**2 - 3*B*a**2*b*c*d**6*i**2/(a*d - b*c)**2 + 3*B*a*b**2*c**2*d
**5*i**2/(a*d - b*c)**2 + B*a*d**5*i**2 - B*b**3*c**3*d**4*i**2/(a*d - b*c)
**2 + B*b*c*d**4*i**2)/(2*B*b*d**5*i**2))/(12*b**3*g**5*(a*d - b*c)**2) + (
-12*A*a**3*d**3*i**2 - 12*A*a**2*b*c*d**2*i**2 - 12*A*a*b**2*c**2*d*i**2 +
36*A*b**3*c**3*i**2 - 7*B*a**3*d**3*i**2 - 7*B*a**2*b*c*d**2*i**2 - 7*B*a*b
**2*c**2*d*i**2 + 9*B*b**3*c**3*i**2 - 12*B*b**3*d**3*i**2*x**3 + x**2*(-72
*A*a*b**2*d**3*i**2 + 72*A*b**3*c*d**2*i**2 - 42*B*a*b**2*d**3*i**2 + 6*B*b
**3*c*d**2*i**2) + x*(-48*A*a**2*b*d**3*i**2 - 48*A*a*b**2*c*d**2*i**2 + 96
*A*b**3*c**2*d*i**2 - 28*B*a**2*b*d**3*i**2 - 28*B*a*b**2*c*d**2*i**2 + 20*
B*b**3*c**2*d*i**2))/(144*a**5*b**3*d*g**5 - 144*a**4*b**4*c*g**5 + x**4*(1
44*a*b**7*d*g**5 - 144*b**8*c*g**5) + x**3*(576*a**2*b**6*d*g**5 - 576*a*b*
*7*c*g**5) + x**2*(864*a**3*b**5*d*g**5 - 864*a**2*b**6*c*g**5) + x*(576*a*
*4*b**4*d*g**5 - 576*a**3*b**5*c*g**5)) + (-B*a**2*d**2*i**2 - 2*B*a*b*c*d*
i**2 - 4*B*a*b*d**2*i**2*x - 3*B*b**2*c**2*i**2 - 8*B*b**2*c*d*i**2*x - 6*B
*b**2*d**2*i**2*x**2)*log(e*(a + b*x)/(c + d*x))/(12*a**4*b**3*g**5 + 48*a*
*3*b**4*g**5*x + 72*a**2*b**5*g**5*x**2 + 48*a*b**6*g**5*x**3 + 12*b**7*g**
5*x**4)
```

3.19 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^6}\,dx$

Optimal. Leaf size=281

$$-\frac{b^2i^2(c+dx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5g^6(a+bx)^5(bc-ad)^3}-\frac{d^2i^2(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3g^6(a+bx)^3(bc-ad)^3}+\frac{bdi^2(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^6(a+bx)^4(bc-ad)^3}-\frac{}{25}$$

```
[Out] -1/9*B*d^2*i^2*(d*x+c)^3/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/8*b*B*d*i^2*(d*x+c)^4
/(-a*d+b*c)^3/g^6/(b*x+a)^4-1/25*b^2*B*i^2*(d*x+c)^5/(-a*d+b*c)^3/g^6/(b*x+
a)^5-1/3*d^2*i^2*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^6/(b*
x+a)^3+1/2*b*d*i^2*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^6/(
b*x+a)^4-1/5*b^2*i^2*(d*x+c)^5*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^6
/(b*x+a)^5
```

Rubi [A] time = 0.68, antiderivative size = 359, normalized size of antiderivative = 1.28, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2528, 2525, 12, 44}

$$-\frac{d^2i^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^3g^6(a+bx)^3}-\frac{di^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^3g^6(a+bx)^4}-\frac{i^2(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5b^3g^6(a+bx)^5}-\frac{Bd^4}{30b^3g^6(a+b}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^6,
x]
```

```
[Out] -(B*(b*c - a*d)^2*i^2)/(25*b^3*g^6*(a + b*x)^5) - (3*B*d*(b*c - a*d)*i^2)/(
40*b^3*g^6*(a + b*x)^4) - (B*d^2*i^2)/(90*b^3*g^6*(a + b*x)^3) + (B*d^3*i^2
)/(60*b^3*(b*c - a*d)*g^6*(a + b*x)^2) - (B*d^4*i^2)/(30*b^3*(b*c - a*d)^2*
g^6*(a + b*x)) - (B*d^5*i^2*Log[a + b*x])/(30*b^3*(b*c - a*d)^3*g^6) - ((b*
c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(5*b^3*g^6*(a + b*x)^5
) - (d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b^3*g^6*(a
+ b*x)^4) - (d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^3*g^6*(a +
b*x)^3) + (B*d^5*i^2*Log[c + d*x])/(30*b^3*(b*c - a*d)^3*g^6)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(19c+19dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^6}\,dx = \int\left(\frac{361(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^6(a+bx)^6}+\frac{722d(bc-ad)\left(A+B\log\right.}{b^2g^6(a+bx)}\right.$$

$$=\frac{\left(361d^2\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^4}\,dx}{b^2g^6}+\frac{(722d(bc-ad))\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^5}\,dx}{b^2g^6}$$

$$=-\frac{361(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{5b^3g^6(a+bx)^5}-\frac{361d(bc-ad)\left(A+B\log\right.}{2b^3g^6(a+bx)^4}$$

$$=-\frac{361(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{5b^3g^6(a+bx)^5}-\frac{361d(bc-ad)\left(A+B\log\right.}{2b^3g^6(a+bx)^4}$$

$$=-\frac{361(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{5b^3g^6(a+bx)^5}-\frac{361d(bc-ad)\left(A+B\log\right.}{2b^3g^6(a+bx)^4}$$

$$=-\frac{361B(bc-ad)^2}{25b^3g^6(a+bx)^5}-\frac{1083Bd(bc-ad)}{40b^3g^6(a+bx)^4}-\frac{361Bd^2}{90b^3g^6(a+bx)^3}+\frac{}{60b^3(}$$

Mathematica [A] time = 0.86, size = 344, normalized size = 1.22

$$i^2\left(-\frac{360a^2Ad^2}{(a+bx)^5}-\frac{60B\left(a^2d^2+abd(3c+5dx)+b^2\left(6c^2+15cdx+10d^2x^2\right)\right)\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^5}-\frac{72a^2Bd^2}{(a+bx)^5}-\frac{360Ab^2c^2}{(a+bx)^5}-\frac{900Abcd}{(a+bx)^4}+\frac{720aAbcd}{(a+bx)^5}-\frac{600A}{(a+b}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x)^6,x]
```

```
[Out] (i^2*((-360*A*b^2*c^2)/(a + b*x)^5 - (72*b^2*B*c^2)/(a + b*x)^5 + (720*a*A*
b*c*d)/(a + b*x)^5 + (144*a*b*B*c*d)/(a + b*x)^5 - (360*a^2*A*d^2)/(a + b*x
)^5 - (72*a^2*B*d^2)/(a + b*x)^5 - (900*A*b*c*d)/(a + b*x)^4 - (135*b*B*c*d
)/(a + b*x)^4 + (900*a*A*d^2)/(a + b*x)^4 + (135*a*B*d^2)/(a + b*x)^4 - (60
0*A*d^2)/(a + b*x)^3 - (20*B*d^2)/(a + b*x)^3 + (30*B*d^3)/((b*c - a*d)*(a
+ b*x)^2) - (60*B*d^4)/((b*c - a*d)^2*(a + b*x)) - (60*B*d^5*Log[a + b*x])/
(b*c - a*d)^3 - (60*B*(a^2*d^2 + a*b*d*(3*c + 5*d*x) + b^2*(6*c^2 + 15*c*d*
x + 10*d^2*x^2))*Log[(e*(a + b*x))/(c + d*x)])/(a + b*x)^5 + (60*B*d^5*Log[
c + d*x])/(b*c - a*d)^3))/(1800*b^3*g^6)
```

fricas [B] time = 1.12, size = 807, normalized size = 2.87

$$-\frac{60\left(Bb^5cd^4-Bab^4d^5\right)i^2x^4-30\left(Bb^5c^2d^3-10\,Bab^4cd^4+9\,Ba^2b^3d^5\right)i^2x^3+10\left(2\,(30\,A+B)b^5c^3d^2-15\,(12\,A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^6,x, algor
ithm="fricas")
```

```
[Out] -1/1800*(60*(B*b^5*c*d^4 - B*a*b^4*d^5)*i^2*x^4 - 30*(B*b^5*c^2*d^3 - 10*B*
a*b^4*c*d^4 + 9*B*a^2*b^3*d^5)*i^2*x^3 + 10*(2*(30*A + B)*b^5*c^3*d^2 - 15*
(12*A + B)*a*b^4*c^2*d^3 + 60*(3*A + B)*a^2*b^3*c*d^4 - (60*A + 47*B)*a^3*b
^2*d^5)*i^2*x^2 + 5*(9*(20*A + 3*B)*b^5*c^4*d - 20*(24*A + 5*B)*a*b^4*c^3*d
^2 + 120*(3*A + B)*a^2*b^3*c^2*d^3 - (60*A + 47*B)*a^4*b*d^5)*i^2*x + (72*(
5*A + B)*b^5*c^5 - 225*(4*A + B)*a*b^4*c^4*d + 200*(3*A + B)*a^2*b^3*c^3*d^
2 - (60*A + 47*B)*a^5*d^5)*i^2 + 60*(B*b^5*d^5*i^2*x^5 + 5*B*a*b^4*d^5*i^2*
x^4 + 10*B*a^2*b^3*d^5*i^2*x^3 + 10*(B*b^5*c^3*d^2 - 3*B*a*b^4*c^2*d^3 + 3*
B*a^2*b^3*c*d^4)*i^2*x^2 + 5*(3*B*b^5*c^4*d - 8*B*a*b^4*c^3*d^2 + 6*B*a^2*b
^3*c^2*d^3)*i^2*x + (6*B*b^5*c^5 - 15*B*a*b^4*c^4*d + 10*B*a^2*b^3*c^3*d^2)
*i^2)*log((b*e*x + a*e)/(d*x + c)))/((b^11*c^3 - 3*a*b^10*c^2*d + 3*a^2*b^9
*c*d^2 - a^3*b^8*d^3)*g^6*x^5 + 5*(a*b^10*c^3 - 3*a^2*b^9*c^2*d + 3*a^3*b^8
*c*d^2 - a^4*b^7*d^3)*g^6*x^4 + 10*(a^2*b^9*c^3 - 3*a^3*b^8*c^2*d + 3*a^4*b
^7*c*d^2 - a^5*b^6*d^3)*g^6*x^3 + 10*(a^3*b^8*c^3 - 3*a^4*b^7*c^2*d + 3*a^5
*b^6*c*d^2 - a^6*b^5*d^3)*g^6*x^2 + 5*(a^4*b^7*c^3 - 3*a^5*b^6*c^2*d + 3*a^
6*b^5*c*d^2 - a^7*b^4*d^3)*g^6*x + (a^5*b^6*c^3 - 3*a^6*b^5*c^2*d + 3*a^7*b
^4*c*d^2 - a^8*b^3*d^3)*g^6)
```

giac [A] time = 3.51, size = 382, normalized size = 1.36

$$\frac{\left(360\,Bb^2e^6\log\left(\frac{bxe+ae}{dx+c}\right)-\frac{900\,(bxe+ae)Bbde^5\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c}+\frac{600\,(bxe+ae)^2Bd^2e^4\log\left(\frac{bxe+ae}{dx+c}\right)}{(dx+c)^2}+360\,Ab^2e^6+72\,Bb^2e^6-\frac{900\,(bxe+ae}{dx+c}\right.}{1800\left(\frac{(bxe+ae)^5b^2c^2g^6}{(dx+c)^5}-\frac{2\,(bxe+ae)^5abcdg^6}{(dx+c)^5}-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^6,x, algor
ithm="giac")
```

```
[Out] 1/1800*(360*B*b^2*e^6*log((b*x*e + a*e)/(d*x + c)) - 900*(b*x*e + a*e)*B*b*
d*e^5*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 600*(b*x*e + a*e)^2*B*d^2*e^
4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 360*A*b^2*e^6 + 72*B*b^2*e^6 -
 900*(b*x*e + a*e)*A*b*d*e^5/(d*x + c) - 225*(b*x*e + a*e)*B*b*d*e^5/(d*x +
 c) + 600*(b*x*e + a*e)^2*A*d^2*e^4/(d*x + c)^2 + 200*(b*x*e + a*e)^2*B*d^2
*e^4/(d*x + c)^2)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)
*(b*c - a*d)))/((b*x*e + a*e)^5*b^2*c^2*g^6/(d*x + c)^5 - 2*(b*x*e + a*e)^5
*a*b*c*d*g^6/(d*x + c)^5 + (b*x*e + a*e)^5*a^2*d^2*g^6/(d*x + c)^5)
```

maple [B] time = 0.05, size = 1262, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^6,x)
```

```
[Out] 1/3*d^3*e^3*i^2/(a*d-b*c)^4/g^6*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3
*a-1/3*d^2*e^3*i^2/(a*d-b*c)^4/g^6*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^3*b*c-1/2*d^2*e^4*i^2/(a*d-b*c)^4/g^6*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*
e+b/d*e)^4*a+1/2*d*e^4*i^2/(a*d-b*c)^4/g^6*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b
*c/d*e+b/d*e)^4*c+1/5*d*e^5*i^2/(a*d-b*c)^4/g^6*A*b^2/(1/(d*x+c)*a*e-1/(d*x
+c)*b*c/d*e+b/d*e)^5*a-1/5*e^5*i^2/(a*d-b*c)^4/g^6*A*b^3/(1/(d*x+c)*a*e-1/(
d*x+c)*b*c/d*e+b/d*e)^5*c+1/3*d^3*e^3*i^2/(a*d-b*c)^4/g^6*B/(1/(d*x+c)*a*e-
1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/3*d^2*e^3*i^
2/(a*d-b*c)^4/g^6*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)*b*c+1/9*d^3*e^3*i^2/(a*d-b*c)^4/g^6*B/(1/(d*x+c)*a*e-1/(
d*x+c)*b*c/d*e+b/d*e)^3*a-1/9*d^2*e^3*i^2/(a*d-b*c)^4/g^6*B/(1/(d*x+c)*a*e-
```

```
1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c-1/2*d^2*e^4*i^2/(a*d-b*c)^4/g^6*B*b/(1/(d*x+
c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/2*d*e
^4*i^2/(a*d-b*c)^4/g^6*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/8*d^2*e^4*i^2/(a*d-b*c)^4/g^6*B*b/(1/(d*x+c
)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/8*d*e^4*i^2/(a*d-b*c)^4/g^6*B*b^2/(1/(
d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c+1/5*d*e^5*i^2/(a*d-b*c)^4/g^6*B*b^2
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
a-1/5*e^5*i^2/(a*d-b*c)^4/g^6*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/25*d*e^5*i^2/(a*d-b*c)^4/g^6*B*b^2/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a-1/25*e^5*i^2/(a*d-b*c)^4/g^6*B*b
^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*c
```

maxima [B] time = 3.04, size = 3029, normalized size = 10.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^6,x, algor
ithm="maxima")
```

```
[Out] -1/1800*B*d^2*i^2*(60*(10*b^2*x^2 + 5*a*b*x + a^2)*log(b*e*x/(d*x + c) + a*
e/(d*x + c))/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b
^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) + (47*a^2*b^4*c^4 - 278*a^3*b^3
*c^3*d + 822*a^4*b^2*c^2*d^2 - 278*a^5*b*c*d^3 + 47*a^6*d^4 + 60*(10*b^6*c^
2*d^2 - 5*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 - 30*(10*b^6*c^3*d - 95*a*b^5*c^2*
d^2 + 46*a^2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^3 + 10*(20*b^6*c^4 - 140*a*b^5*c^
3*d + 537*a^2*b^4*c^2*d^2 - 248*a^3*b^3*c*d^3 + 47*a^4*b^2*d^4)*x^2 + 5*(35
*a*b^5*c^4 - 218*a^2*b^4*c^3*d + 702*a^3*b^3*c^2*d^2 - 278*a^4*b^2*c*d^3 +
47*a^5*b*d^4)*x)/((b^12*c^4 - 4*a*b^11*c^3*d + 6*a^2*b^10*c^2*d^2 - 4*a^3*b
^9*c*d^3 + a^4*b^8*d^4)*g^6*x^5 + 5*(a*b^11*c^4 - 4*a^2*b^10*c^3*d + 6*a^3*
b^9*c^2*d^2 - 4*a^4*b^8*c*d^3 + a^5*b^7*d^4)*g^6*x^4 + 10*(a^2*b^10*c^4 - 4
*a^3*b^9*c^3*d + 6*a^4*b^8*c^2*d^2 - 4*a^5*b^7*c*d^3 + a^6*b^6*d^4)*g^6*x^3
 + 10*(a^3*b^9*c^4 - 4*a^4*b^8*c^3*d + 6*a^5*b^7*c^2*d^2 - 4*a^6*b^6*c*d^3
+ a^7*b^5*d^4)*g^6*x^2 + 5*(a^4*b^8*c^4 - 4*a^5*b^7*c^3*d + 6*a^6*b^6*c^2*d
^2 - 4*a^7*b^5*c*d^3 + a^8*b^4*d^4)*g^6*x + (a^5*b^7*c^4 - 4*a^6*b^6*c^3*d
+ 6*a^7*b^5*c^2*d^2 - 4*a^8*b^4*c*d^3 + a^9*b^3*d^4)*g^6) + 60*(10*b^2*c^2*
d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(b*x + a)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^
2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6) -
60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(d*x + c)/((b^8*c^5 - 5*a*b^
7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b
^3*d^5)*g^6)) - 1/600*B*c*d*i^2*(60*(5*b*x + a)*log(b*e*x/(d*x + c) + a*e/(
d*x + c))/(b^7*g^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*
g^6*x^2 + 5*a^4*b^3*g^6*x + a^5*b^2*g^6) + (27*a*b^4*c^4 - 148*a^2*b^3*c^3*
d + 352*a^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d^4 - 60*(5*b^5*c*d^3 -
a*b^4*d^4)*x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^2*b^3*d^4)*x^3 -
10*(10*b^5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*d^3 - 47*a^3*b^2*d^4)*x
^2 + 5*(15*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^2*d^2 - 428*a^3*b^2*c*d
^3 + 77*a^4*b*d^4)*x)/((b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2*b^9*c^2*d^2 - 4*a
^3*b^8*c*d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a^2*b^9*c^3*d + 6*a
^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*x^4 + 10*(a^2*b^9*c^4 -
 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a^6*b^5*d^4)*g^6*x
^3 + 10*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 - 4*a^6*b^5*c*d^
3 + a^7*b^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d + 6*a^6*b^5*c^2
*d^2 - 4*a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4 - 4*a^6*b^5*c^3*
d + 6*a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6) - 60*(5*b*c*d^4
 - a*d^5)*log(b*x + a)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*
a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4 - a*d
^5)*log(d*x + c)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^
4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6)) - 1/300*B*c^2*i^2*((60*b^4
*d^4*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2 - 163*a^3*b*c*
```

```
d^3 + 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 -
13*a*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a*b^3*c^2*d^2 +
43*a^2*b^2*c*d^3 - 77*a^3*b*d^4)*x)/((b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*
c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c^4 - 4*a^2*b^8
*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g^6*x^4 + 10*(a
^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6*b^
4*d^4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d^2 - 4*
a^6*b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5*b^5*c^3*d + 6
*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*g^6*x + (a^5*b^5*c^4 - 4*
a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d^4)*g^6) + 60*
log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^
2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6) + 60*d^5*
log(b*x + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^
2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) - 60*d^5*log(d*x + c)/((b^6*c^5 -
 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4
- a^5*b*d^5)*g^6)) - 1/10*(5*b*x + a)*A*c*d*i^2/(b^7*g^6*x^5 + 5*a*b^6*g^6*
x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x + a^5*b^2*g
^6) - 1/30*(10*b^2*x^2 + 5*a*b*x + a^2)*A*d^2*i^2/(b^8*g^6*x^5 + 5*a*b^7*g^
6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3
*g^6) - 1/5*A*c^2*i^2/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 +
 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6)
```

mupad [B] time = 7.99, size = 941, normalized size = 3.35

$$\frac{B\,d^5\,i^2\,\mathrm{atanh}\left(\frac{30\,a^3\,b^3\,d^3\,g^6-30\,a^2\,b^4\,c\,d^2\,g^6-30\,a\,b^5\,c^2\,d\,g^6+30\,b^6\,c^3\,g^6}{30\,b^3\,g^6\,(a\,d-b\,c)^3}+\frac{2\,b\,d\,x\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}{(a\,d-b\,c)^3}\right)}{15\,b^3\,g^6\,(a\,d-b\,c)^3}-\frac{\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\,\left(a\,\left(\frac{B\,a\,d^2\,i^2}{30\,b^4\,g^6}+\frac{B}{10}\right.\right.}{5\,a^4\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^6,
x)
```

```
[Out] (B*d^5*i^2*atanh((30*b^6*c^3*g^6 + 30*a^3*b^3*d^3*g^6 - 30*a*b^5*c^2*d*g^6
- 30*a^2*b^4*c*d^2*g^6)/(30*b^3*g^6*(a*d - b*c)^3) + (2*b*d*x*(a^2*d^2 + b^
2*c^2 - 2*a*b*c*d))/(a*d - b*c)^3))/(15*b^3*g^6*(a*d - b*c)^3) - (log((e*(a
 + b*x))/(c + d*x))*(a*((B*a*d^2*i^2)/(30*b^4*g^6) + (B*c*d*i^2)/(10*b^3*g^
6)) + x*(b*((B*a*d^2*i^2)/(30*b^4*g^6) + (B*c*d*i^2)/(10*b^3*g^6)) + (2*B*a
*d^2*i^2)/(15*b^3*g^6) + (2*B*c*d*i^2)/(5*b^2*g^6)) + (B*c^2*i^2)/(5*b^2*g^
6) + (B*d^2*i^2*x^2)/(3*b^2*g^6)))/(5*a^4*x + a^5/b + b^4*x^5 + 10*a^3*b*x^
2 + 5*a*b^3*x^4 + 10*a^2*b^2*x^3) - ((60*A*a^4*d^4*i^2 + 360*A*b^4*c^4*i^2
+ 47*B*a^4*d^4*i^2 + 72*B*b^4*c^4*i^2 + 60*A*a^2*b^2*c^2*d^2*i^2 + 47*B*a^2
*b^2*c^2*d^2*i^2 - 540*A*a*b^3*c^3*d*i^2 + 60*A*a^3*b*c*d^3*i^2 - 153*B*a*b
^3*c^3*d*i^2 + 47*B*a^3*b*c*d^3*i^2)/(60*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) +
 (x^2*(60*A*a^2*b^2*d^4*i^2 + 47*B*a^2*b^2*d^4*i^2 + 60*A*b^4*c^2*d^2*i^2 +
 2*B*b^4*c^2*d^2*i^2 - 120*A*a*b^3*c*d^3*i^2 - 13*B*a*b^3*c*d^3*i^2))/(6*(a
^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x*(60*A*a^3*b*d^4*i^2 + 47*B*a^3*b*d^4*i^
2 + 180*A*b^4*c^3*d*i^2 + 27*B*b^4*c^3*d*i^2 - 300*A*a*b^3*c^2*d^2*i^2 + 60
*A*a^2*b^2*c*d^3*i^2 - 73*B*a*b^3*c^2*d^2*i^2 + 47*B*a^2*b^2*c*d^3*i^2))/(1
2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (d*x^3*(9*B*a*b^3*d^3*i^2 - B*b^4*c*d^
2*i^2))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B*b^4*d^4*i^2*x^4)/(a^2*d^2
+ b^2*c^2 - 2*a*b*c*d))/(30*a^5*b^3*g^6 + 30*b^8*g^6*x^5 + 150*a^4*b^4*g^6*
x + 150*a*b^7*g^6*x^4 + 300*a^3*b^5*g^6*x^2 + 300*a^2*b^6*g^6*x^3)
```

sympy [B] time = 92.23, size = 1300, normalized size = 4.63

$$-\frac{Bd^5i^2\log\left(x+\frac{-\frac{Ba^4d^9i^2}{(ad-bc)^3}+\frac{4Ba^3bcd^8i^2}{(ad-bc)^3}-\frac{6Ba^2b^2c^2d^7i^2}{(ad-bc)^3}+\frac{4Bab^3c^3d^6i^2}{(ad-bc)^3}+Bad^6i^2-\frac{Bb^4c^4d^5i^2}{(ad-bc)^3}+Bbcd^5i^2}{2Bbd^6i^2}\right)}{30b^3g^6\,(ad-bc)^3}+\frac{Bd^5i^2\log\left(x+\frac{\frac{Ba^4d^9i^2}{(ad-bc)^3}-\frac{4Ba^3bcd^8i^2}{(ad-bc)^3}+\frac{6Ba^2}{(a}\right.}{30b^3g^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**6,x)
```

```
[Out] -B*d**5*i**2*log(x + (-B*a**4*d**9*i**2/(a*d - b*c)**3 + 4*B*a**3*b*c*d**8*
i**2/(a*d - b*c)**3 - 6*B*a**2*b**2*c**2*d**7*i**2/(a*d - b*c)**3 + 4*B*a*b
**3*c**3*d**6*i**2/(a*d - b*c)**3 + B*a*d**6*i**2 - B*b**4*c**4*d**5*i**2/(
a*d - b*c)**3 + B*b*c*d**5*i**2)/(2*B*b*d**6*i**2))/(30*b**3*g**6*(a*d - b*
c)**3) + B*d**5*i**2*log(x + (B*a**4*d**9*i**2/(a*d - b*c)**3 - 4*B*a**3*b*
c*d**8*i**2/(a*d - b*c)**3 + 6*B*a**2*b**2*c**2*d**7*i**2/(a*d - b*c)**3 -
4*B*a*b**3*c**3*d**6*i**2/(a*d - b*c)**3 + B*a*d**6*i**2 + B*b**4*c**4*d**5
*i**2/(a*d - b*c)**3 + B*b*c*d**5*i**2)/(2*B*b*d**6*i**2))/(30*b**3*g**6*(a
*d - b*c)**3) + (-60*A*a**4*d**4*i**2 - 60*A*a**3*b*c*d**3*i**2 - 60*A*a**2
*b**2*c**2*d**2*i**2 + 540*A*a*b**3*c**3*d*i**2 - 360*A*b**4*c**4*i**2 - 47
*B*a**4*d**4*i**2 - 47*B*a**3*b*c*d**3*i**2 - 47*B*a**2*b**2*c**2*d**2*i**2
 + 153*B*a*b**3*c**3*d*i**2 - 72*B*b**4*c**4*i**2 - 60*B*b**4*d**4*i**2*x**
4 + x**3*(-270*B*a*b**3*d**4*i**2 + 30*B*b**4*c*d**3*i**2) + x**2*(-600*A*a
**2*b**2*d**4*i**2 + 1200*A*a*b**3*c*d**3*i**2 - 600*A*b**4*c**2*d**2*i**2
- 470*B*a**2*b**2*d**4*i**2 + 130*B*a*b**3*c*d**3*i**2 - 20*B*b**4*c**2*d**
2*i**2) + x*(-300*A*a**3*b*d**4*i**2 - 300*A*a**2*b**2*c*d**3*i**2 + 1500*A
*a*b**3*c**2*d**2*i**2 - 900*A*b**4*c**3*d*i**2 - 235*B*a**3*b*d**4*i**2 -
235*B*a**2*b**2*c*d**3*i**2 + 365*B*a*b**3*c**2*d**2*i**2 - 135*B*b**4*c**3
*d*i**2))/(1800*a**7*b**3*d**2*g**6 - 3600*a**6*b**4*c*d*g**6 + 1800*a**5*b
**5*c**2*g**6 + x**5*(1800*a**2*b**8*d**2*g**6 - 3600*a*b**9*c*d*g**6 + 180
0*b**10*c**2*g**6) + x**4*(9000*a**3*b**7*d**2*g**6 - 18000*a**2*b**8*c*d*g
**6 + 9000*a*b**9*c**2*g**6) + x**3*(18000*a**4*b**6*d**2*g**6 - 36000*a**3
*b**7*c*d*g**6 + 18000*a**2*b**8*c**2*g**6) + x**2*(18000*a**5*b**5*d**2*g*
*6 - 36000*a**4*b**6*c*d*g**6 + 18000*a**3*b**7*c**2*g**6) + x*(9000*a**6*b
**4*d**2*g**6 - 18000*a**5*b**5*c*d*g**6 + 9000*a**4*b**6*c**2*g**6)) + (-B
*a**2*d**2*i**2 - 3*B*a*b*c*d*i**2 - 5*B*a*b*d**2*i**2*x - 6*B*b**2*c**2*i*
*2 - 15*B*b**2*c*d*i**2*x - 10*B*b**2*d**2*i**2*x**2)*log(e*(a + b*x)/(c +
d*x))/(30*a**5*b**3*g**6 + 150*a**4*b**4*g**6*x + 300*a**3*b**5*g**6*x**2 +
 300*a**2*b**6*g**6*x**3 + 150*a*b**7*g**6*x**4 + 30*b**8*g**6*x**5)
```

3.20 $\int (ag+bgx)^3(ci+dix)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right) dx$

Optimal. Leaf size=457

$$\frac{b^3g^3i^3(c+dx)^7\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{7d^4}-\frac{b^2g^3i^3(c+dx)^6(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2d^4}-\frac{g^3i^3(c+dx)^4(bc-ad)^3\left(B\log\right.}{4d^4}$$

```
[Out] 1/140*B*(-a*d+b*c)^6*g^3*i^3*x/b^3/d^3+1/280*B*(-a*d+b*c)^5*g^3*i^3*(d*x+c)
^2/b^2/d^4+1/420*B*(-a*d+b*c)^4*g^3*i^3*(d*x+c)^3/b/d^4-17/280*B*(-a*d+b*c)
^3*g^3*i^3*(d*x+c)^4/d^4+1/14*b*B*(-a*d+b*c)^2*g^3*i^3*(d*x+c)^5/d^4-1/42*b
^2*B*(-a*d+b*c)*g^3*i^3*(d*x+c)^6/d^4+1/140*B*(-a*d+b*c)^7*g^3*i^3*ln((b*x+
a)/(d*x+c))/b^4/d^4-1/4*(-a*d+b*c)^3*g^3*i^3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d
*x+c)))/d^4+3/5*b*(-a*d+b*c)^2*g^3*i^3*(d*x+c)^5*(A+B*ln(e*(b*x+a)/(d*x+c))
)/d^4-1/2*b^2*(-a*d+b*c)*g^3*i^3*(d*x+c)^6*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^4+
1/7*b^3*g^3*i^3*(d*x+c)^7*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^4+1/140*B*(-a*d+b*c
)^7*g^3*i^3*ln(d*x+c)/b^4/d^4
```

Rubi [A] time = 0.94, antiderivative size = 416, normalized size of antiderivative = 0.91, number of steps used = 18, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2g^3i^3(a+bx)^6(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^4}+\frac{d^3g^3i^3(a+bx)^7\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{7b^4}+\frac{g^3i^3(a+bx)^4(bc-ad)^3\left(B\right.}{4b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] -(B*(b*c - a*d)^6*g^3*i^3*x)/(140*b^3*d^3) + (B*(b*c - a*d)^5*g^3*i^3*(a +
b*x)^2)/(280*b^4*d^2) - (B*(b*c - a*d)^4*g^3*i^3*(a + b*x)^3)/(420*b^4*d) -
 (17*B*(b*c - a*d)^3*g^3*i^3*(a + b*x)^4)/(280*b^4) - (B*d*(b*c - a*d)^2*g^
3*i^3*(a + b*x)^5)/(14*b^4) - (B*d^2*(b*c - a*d)*g^3*i^3*(a + b*x)^6)/(42*b
^4) + ((b*c - a*d)^3*g^3*i^3*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)
]))/(4*b^4) + (3*d*(b*c - a*d)^2*g^3*i^3*(a + b*x)^5*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(5*b^4) + (d^2*(b*c - a*d)*g^3*i^3*(a + b*x)^6*(A + B*Log[(
e*(a + b*x))/(c + d*x)]))/(2*b^4) + (d^3*g^3*i^3*(a + b*x)^7*(A + B*Log[(e*
(a + b*x))/(c + d*x)]))/(7*b^4) + (B*(b*c - a*d)^7*g^3*i^3*Log[c + d*x])/(1
40*b^4*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (20c+20dx)^3(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx=\int\left(\frac{(-bc+ad)^3g^3(20c+20dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{d^3}\right.$$

$$=\frac{\left(b^3g^3\right)\int(20c+20dx)^6\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{8000d^3}-$$

$$=-\frac{2000(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^4}$$

$$=-\frac{2000(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^4}$$

$$=-\frac{2000(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^4}$$

$$=\frac{400B(bc-ad)^6g^3x}{7b^3d^3}+\frac{200B(bc-ad)^5g^3(c+dx)^2}{7b^2d^4}+$$

Mathematica [A] time = 0.59, size = 586, normalized size = 1.28

$$\frac{g^3i^3\left(120d^3(a+bx)^7\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+420d^2(a+bx)^6(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+210(a+bx)^4(bc-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x
)]),x]
```

```
[Out] (g^3*i^3*((120*b^2*B*c*(b*c - a*d)^5*x)/d^3 - (126*b*B*(b*c - a*d)^6*x)/d^3
 + (120*a*b*B*(-(b*c) + a*d)^5*x)/d^2 - (60*b*B*c*(b*c - a*d)^4*(a + b*x)^2
)/d^2 + (60*a*B*(b*c - a*d)^4*(a + b*x)^2)/d + (63*B*(b*c - a*d)^5*(a + b*x
)^2)/d^2 + (40*b*B*c*(b*c - a*d)^3*(a + b*x)^3)/d - (42*B*(b*c - a*d)^4*(a
+ b*x)^3)/d + 40*a*B*(-(b*c) + a*d)^3*(a + b*x)^3 - 30*b*B*c*(b*c - a*d)^2*
(a + b*x)^4 + 30*a*B*d*(b*c - a*d)^2*(a + b*x)^4 + 21*B*(-(b*c) + a*d)^3*(a
 + b*x)^4 + 24*b*B*c*d*(b*c - a*d)*(a + b*x)^5 - 84*B*d*(b*c - a*d)^2*(a +
b*x)^5 + 24*a*B*d^2*(-(b*c) + a*d)*(a + b*x)^5 - 20*b*B*c*d^2*(a + b*x)^6 +
 20*a*B*d^3*(a + b*x)^6 + 210*(b*c - a*d)^3*(a + b*x)^4*(A + B*Log[(e*(a +
b*x))/(c + d*x)]) + 504*d*(b*c - a*d)^2*(a + b*x)^5*(A + B*Log[(e*(a + b*x)
)/(c + d*x)]) + 420*d^2*(b*c - a*d)*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(c
 + d*x)]) + 120*d^3*(a + b*x)^7*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - (120
*b*B*c*(b*c - a*d)^6*Log[c + d*x])/d^4 + (120*a*B*(b*c - a*d)^6*Log[c + d*x
])/d^3 + (126*B*(b*c - a*d)^7*Log[c + d*x])/d^4))/(840*b^4)
```

fricas [B] time = 1.54, size = 912, normalized size = 2.00

$$\frac{120\,Ab^7d^7g^3i^3x^7 + 20\left((21\,A - B)b^7cd^6 + (21\,A + B)ab^6d^7\right)g^3i^3x^6 + 12\left((42\,A - 5\,B)b^7c^2d^5 + 126\,Aab^6cd^6 + (42\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="fricas")
```

```
[Out] 1/840*(120*A*b^7*d^7*g^3*i^3*x^7 + 20*((21*A - B)*b^7*c*d^6 + (21*A + B)*a*
b^6*d^7)*g^3*i^3*x^6 + 12*((42*A - 5*B)*b^7*c^2*d^5 + 126*A*a*b^6*c*d^6 + (
42*A + 5*B)*a^2*b^5*d^7)*g^3*i^3*x^5 + 3*((70*A - 17*B)*b^7*c^3*d^4 + 7*(90
*A - 7*B)*a*b^6*c^2*d^5 + 7*(90*A + 7*B)*a^2*b^5*c*d^6 + (70*A + 17*B)*a^3*
b^4*d^7)*g^3*i^3*x^4 - 2*(B*b^7*c^4*d^3 - 14*(30*A - 7*B)*a*b^6*c^3*d^4 - 1
260*A*a^2*b^5*c^2*d^5 - 14*(30*A + 7*B)*a^3*b^4*c*d^6 - B*a^4*b^3*d^7)*g^3*
i^3*x^3 + 3*(B*b^7*c^5*d^2 - 7*B*a*b^6*c^4*d^3 + 84*(5*A - B)*a^2*b^5*c^3*d
^4 + 84*(5*A + B)*a^3*b^4*c^2*d^5 + 7*B*a^4*b^3*c*d^6 - B*a^5*b^2*d^7)*g^3*
i^3*x^2 - 6*(B*b^7*c^6*d - 7*B*a*b^6*c^5*d^2 + 21*B*a^2*b^5*c^4*d^3 - 140*A
*a^3*b^4*c^3*d^4 - 21*B*a^4*b^3*c^2*d^5 + 7*B*a^5*b^2*c*d^6 - B*a^6*b*d^7)*
g^3*i^3*x + 6*(35*B*a^4*b^3*c^3*d^4 - 21*B*a^5*b^2*c^2*d^5 + 7*B*a^6*b*c*d^
6 - B*a^7*d^7)*g^3*i^3*log(b*x + a) + 6*(B*b^7*c^7 - 7*B*a*b^6*c^6*d + 21*B
*a^2*b^5*c^5*d^2 - 35*B*a^3*b^4*c^4*d^3)*g^3*i^3*log(d*x + c) + 6*(20*B*b^7
*d^7*g^3*i^3*x^7 + 140*B*a^3*b^4*c^3*d^4*g^3*i^3*x + 70*(B*b^7*c*d^6 + B*a*
b^6*d^7)*g^3*i^3*x^6 + 84*(B*b^7*c^2*d^5 + 3*B*a*b^6*c*d^6 + B*a^2*b^5*d^7)
*g^3*i^3*x^5 + 35*(B*b^7*c^3*d^4 + 9*B*a*b^6*c^2*d^5 + 9*B*a^2*b^5*c*d^6 +
B*a^3*b^4*d^7)*g^3*i^3*x^4 + 140*(B*a*b^6*c^3*d^4 + 3*B*a^2*b^5*c^2*d^5 + B
*a^3*b^4*c*d^6)*g^3*i^3*x^3 + 210*(B*a^2*b^5*c^3*d^4 + B*a^3*b^4*c^2*d^5)*g
^3*i^3*x^2)*log((b*e*x + a*e)/(d*x + c)))/(b^4*d^4)
```

giac [B] time = 2.58, size = 10098, normalized size = 22.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="giac")
```

```
[Out] 1/840*(6*B*b^15*c^8*g^3*i*e^8*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 48*B*
a*b^14*c^7*d*g^3*i*e^8*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 168*B*a^2*b^
13*c^6*d^2*g^3*i*e^8*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 336*B*a^3*b^12
*c^5*d^3*g^3*i*e^8*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 420*B*a^4*b^11*c
^4*d^4*g^3*i*e^8*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 336*B*a^5*b^10*c^3
*d^5*g^3*i*e^8*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 168*B*a^6*b^9*c^2*d^
6*g^3*i*e^8*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 48*B*a^7*b^8*c*d^7*g^3*
i*e^8*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 6*B*a^8*b^7*d^8*g^3*i*e^8*log
(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 42*(b*x*e + a*e)*B*b^14*c^8*d*g^3*i*e^
7*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 336*(b*x*e + a*e)*B*a*b
^13*c^7*d^2*g^3*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 117
6*(b*x*e + a*e)*B*a^2*b^12*c^6*d^3*g^3*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*
x + c))/(d*x + c) + 2352*(b*x*e + a*e)*B*a^3*b^11*c^5*d^4*g^3*i*e^7*log(-b*
e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 2940*(b*x*e + a*e)*B*a^4*b^10*c^
4*d^5*g^3*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 2352*(b*x
*e + a*e)*B*a^5*b^9*c^3*d^6*g^3*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c))
/(d*x + c) - 1176*(b*x*e + a*e)*B*a^6*b^8*c^2*d^7*g^3*i*e^7*log(-b*e + (b*x
*e + a*e)*d/(d*x + c))/(d*x + c) + 336*(b*x*e + a*e)*B*a^7*b^7*c*d^8*g^3*i*
e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 42*(b*x*e + a*e)*B*a^
8*b^6*d^9*g^3*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 126*(
b*x*e + a*e)^2*B*b^13*c^8*d^2*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c
```

```
))/(d*x + c)^2 - 1008*(b*x*e + a*e)^2*B*a*b^12*c^7*d^3*g^3*i*e^6*log(-b*e +
 (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 3528*(b*x*e + a*e)^2*B*a^2*b^11*c
^6*d^4*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 7056*(
b*x*e + a*e)^2*B*a^3*b^10*c^5*d^5*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x
 + c))/(d*x + c)^2 + 8820*(b*x*e + a*e)^2*B*a^4*b^9*c^4*d^6*g^3*i*e^6*log(-
b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 7056*(b*x*e + a*e)^2*B*a^5*b
^8*c^3*d^7*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 35
28*(b*x*e + a*e)^2*B*a^6*b^7*c^2*d^8*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(
d*x + c))/(d*x + c)^2 - 1008*(b*x*e + a*e)^2*B*a^7*b^6*c*d^9*g^3*i*e^6*log(
-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 126*(b*x*e + a*e)^2*B*a^8*b
^5*d^10*g^3*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 210*(
b*x*e + a*e)^3*B*b^12*c^8*d^3*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c
))/(d*x + c)^3 + 1680*(b*x*e + a*e)^3*B*a*b^11*c^7*d^4*g^3*i*e^5*log(-b*e +
 (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 5880*(b*x*e + a*e)^3*B*a^2*b^10*c
^6*d^5*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 11760*
(b*x*e + a*e)^3*B*a^3*b^9*c^5*d^6*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x
 + c))/(d*x + c)^3 - 14700*(b*x*e + a*e)^3*B*a^4*b^8*c^4*d^7*g^3*i*e^5*log(
-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 11760*(b*x*e + a*e)^3*B*a^5
*b^7*c^3*d^8*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 -
5880*(b*x*e + a*e)^3*B*a^6*b^6*c^2*d^9*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d
/(d*x + c))/(d*x + c)^3 + 1680*(b*x*e + a*e)^3*B*a^7*b^5*c*d^10*g^3*i*e^5*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 210*(b*x*e + a*e)^3*B*a^
8*b^4*d^11*g^3*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 21
0*(b*x*e + a*e)^4*B*b^11*c^8*d^4*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x
+ c))/(d*x + c)^4 - 1680*(b*x*e + a*e)^4*B*a*b^10*c^7*d^5*g^3*i*e^4*log(-b*
e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 5880*(b*x*e + a*e)^4*B*a^2*b^9
*c^6*d^6*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 1176
0*(b*x*e + a*e)^4*B*a^3*b^8*c^5*d^7*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d
*x + c))/(d*x + c)^4 + 14700*(b*x*e + a*e)^4*B*a^4*b^7*c^4*d^8*g^3*i*e^4*lo
g(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 11760*(b*x*e + a*e)^4*B*a
^5*b^6*c^3*d^9*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4
+ 5880*(b*x*e + a*e)^4*B*a^6*b^5*c^2*d^10*g^3*i*e^4*log(-b*e + (b*x*e + a*e
)*d/(d*x + c))/(d*x + c)^4 - 1680*(b*x*e + a*e)^4*B*a^7*b^4*c*d^11*g^3*i*e^
4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 210*(b*x*e + a*e)^4*B
*a^8*b^3*d^12*g^3*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 -
 126*(b*x*e + a*e)^5*B*b^10*c^8*d^5*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d
*x + c))/(d*x + c)^5 + 1008*(b*x*e + a*e)^5*B*a*b^9*c^7*d^6*g^3*i*e^3*log(-
b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 3528*(b*x*e + a*e)^5*B*a^2*b
^8*c^6*d^7*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 70
56*(b*x*e + a*e)^5*B*a^3*b^7*c^5*d^8*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(
d*x + c))/(d*x + c)^5 - 8820*(b*x*e + a*e)^5*B*a^4*b^6*c^4*d^9*g^3*i*e^3*lo
g(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 7056*(b*x*e + a*e)^5*B*a^
5*b^5*c^3*d^10*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5
- 3528*(b*x*e + a*e)^5*B*a^6*b^4*c^2*d^11*g^3*i*e^3*log(-b*e + (b*x*e + a*e
)*d/(d*x + c))/(d*x + c)^5 + 1008*(b*x*e + a*e)^5*B*a^7*b^3*c*d^12*g^3*i*e^
3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 126*(b*x*e + a*e)^5*B
*a^8*b^2*d^13*g^3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 +
 42*(b*x*e + a*e)^6*B*b^9*c^8*d^6*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x
 + c))/(d*x + c)^6 - 336*(b*x*e + a*e)^6*B*a*b^8*c^7*d^7*g^3*i*e^2*log(-b*e
 + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 + 1176*(b*x*e + a*e)^6*B*a^2*b^7*
c^6*d^8*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 - 2352*
(b*x*e + a*e)^6*B*a^3*b^6*c^5*d^9*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x
 + c))/(d*x + c)^6 + 2940*(b*x*e + a*e)^6*B*a^4*b^5*c^4*d^10*g^3*i*e^2*log(
-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 - 2352*(b*x*e + a*e)^6*B*a^5*
b^4*c^3*d^11*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 +
1176*(b*x*e + a*e)^6*B*a^6*b^3*c^2*d^12*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*
d/(d*x + c))/(d*x + c)^6 - 336*(b*x*e + a*e)^6*B*a^7*b^2*c*d^13*g^3*i*e^2*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 + 42*(b*x*e + a*e)^6*B*a^8
*b*d^14*g^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 - 6*(b*
```

```
x*e + a*e)^7*B*b^8*c^8*d^7*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d
*x + c)^7 + 48*(b*x*e + a*e)^7*B*a*b^7*c^7*d^8*g^3*i*e*log(-b*e + (b*x*e +
a*e)*d/(d*x + c))/(d*x + c)^7 - 168*(b*x*e + a*e)^7*B*a^2*b^6*c^6*d^9*g^3*i
*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^7 + 336*(b*x*e + a*e)^7*
B*a^3*b^5*c^5*d^10*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^
7 - 420*(b*x*e + a*e)^7*B*a^4*b^4*c^4*d^11*g^3*i*e*log(-b*e + (b*x*e + a*e)
*d/(d*x + c))/(d*x + c)^7 + 336*(b*x*e + a*e)^7*B*a^5*b^3*c^3*d^12*g^3*i*e*
log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^7 - 168*(b*x*e + a*e)^7*B*a
^6*b^2*c^2*d^13*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^7 +
 48*(b*x*e + a*e)^7*B*a^7*b*c*d^14*g^3*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x
+ c))/(d*x + c)^7 - 6*(b*x*e + a*e)^7*B*a^8*d^15*g^3*i*e*log(-b*e + (b*x*e
+ a*e)*d/(d*x + c))/(d*x + c)^7 - 210*(b*x*e + a*e)^4*B*b^11*c^8*d^4*g^3*i*
e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 1680*(b*x*e + a*e)^4*B*a*b^1
0*c^7*d^5*g^3*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 5880*(b*x*e
+ a*e)^4*B*a^2*b^9*c^6*d^6*g^3*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)
^4 + 11760*(b*x*e + a*e)^4*B*a^3*b^8*c^5*d^7*g^3*i*e^4*log((b*x*e + a*e)/(d
*x + c))/(d*x + c)^4 - 14700*(b*x*e + a*e)^4*B*a^4*b^7*c^4*d^8*g^3*i*e^4*lo
g((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 11760*(b*x*e + a*e)^4*B*a^5*b^6*c^
3*d^9*g^3*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 5880*(b*x*e + a*
e)^4*B*a^6*b^5*c^2*d^10*g^3*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4
+ 1680*(b*x*e + a*e)^4*B*a^7*b^4*c*d^11*g^3*i*e^4*log((b*x*e + a*e)/(d*x +
c))/(d*x + c)^4 - 210*(b*x*e + a*e)^4*B*a^8*b^3*d^12*g^3*i*e^4*log((b*x*e +
 a*e)/(d*x + c))/(d*x + c)^4 + 126*(b*x*e + a*e)^5*B*b^10*c^8*d^5*g^3*i*e^3
*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 1008*(b*x*e + a*e)^5*B*a*b^9*c^
7*d^6*g^3*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 3528*(b*x*e + a*
e)^5*B*a^2*b^8*c^6*d^7*g^3*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 -
 7056*(b*x*e + a*e)^5*B*a^3*b^7*c^5*d^8*g^3*i*e^3*log((b*x*e + a*e)/(d*x +
c))/(d*x + c)^5 + 8820*(b*x*e + a*e)^5*B*a^4*b^6*c^4*d^9*g^3*i*e^3*log((b*x
*e + a*e)/(d*x + c))/(d*x + c)^5 - 7056*(b*x*e + a*e)^5*B*a^5*b^5*c^3*d^10*
g^3*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 3528*(b*x*e + a*e)^5*B
*a^6*b^4*c^2*d^11*g^3*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 1008
*(b*x*e + a*e)^5*B*a^7*b^3*c*d^12*g^3*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d
*x + c)^5 + 126*(b*x*e + a*e)^5*B*a^8*b^2*d^13*g^3*i*e^3*log((b*x*e + a*e)/
(d*x + c))/(d*x + c)^5 - 42*(b*x*e + a*e)^6*B*b^9*c^8*d^6*g^3*i*e^2*log((b*
x*e + a*e)/(d*x + c))/(d*x + c)^6 + 336*(b*x*e + a*e)^6*B*a*b^8*c^7*d^7*g^3
*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 - 1176*(b*x*e + a*e)^6*B*a^
2*b^7*c^6*d^8*g^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 2352*(b*
x*e + a*e)^6*B*a^3*b^6*c^5*d^9*g^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x
+ c)^6 - 2940*(b*x*e + a*e)^6*B*a^4*b^5*c^4*d^10*g^3*i*e^2*log((b*x*e + a*e
)/(d*x + c))/(d*x + c)^6 + 2352*(b*x*e + a*e)^6*B*a^5*b^4*c^3*d^11*g^3*i*e^
2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 - 1176*(b*x*e + a*e)^6*B*a^6*b^3
*c^2*d^12*g^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 336*(b*x*e +
 a*e)^6*B*a^7*b^2*c*d^13*g^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6
 - 42*(b*x*e + a*e)^6*B*a^8*b*d^14*g^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(
d*x + c)^6 + 6*(b*x*e + a*e)^7*B*b^8*c^8*d^7*g^3*i*e*log((b*x*e + a*e)/(d*x
 + c))/(d*x + c)^7 - 48*(b*x*e + a*e)^7*B*a*b^7*c^7*d^8*g^3*i*e*log((b*x*e
+ a*e)/(d*x + c))/(d*x + c)^7 + 168*(b*x*e + a*e)^7*B*a^2*b^6*c^6*d^9*g^3*i
*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^7 - 336*(b*x*e + a*e)^7*B*a^3*b^5
*c^5*d^10*g^3*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^7 + 420*(b*x*e + a
*e)^7*B*a^4*b^4*c^4*d^11*g^3*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^7 -
 336*(b*x*e + a*e)^7*B*a^5*b^3*c^3*d^12*g^3*i*e*log((b*x*e + a*e)/(d*x + c)
)/(d*x + c)^7 + 168*(b*x*e + a*e)^7*B*a^6*b^2*c^2*d^13*g^3*i*e*log((b*x*e +
 a*e)/(d*x + c))/(d*x + c)^7 - 48*(b*x*e + a*e)^7*B*a^7*b*c*d^14*g^3*i*e*lo
g((b*x*e + a*e)/(d*x + c))/(d*x + c)^7 + 6*(b*x*e + a*e)^7*B*a^8*d^15*g^3*i
*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^7 + 6*A*b^15*c^8*g^3*i*e^8 - 48*A
*a*b^14*c^7*d*g^3*i*e^8 + 168*A*a^2*b^13*c^6*d^2*g^3*i*e^8 - 336*A*a^3*b^12
*c^5*d^3*g^3*i*e^8 + 420*A*a^4*b^11*c^4*d^4*g^3*i*e^8 - 336*A*a^5*b^10*c^3*
d^5*g^3*i*e^8 + 168*A*a^6*b^9*c^2*d^6*g^3*i*e^8 - 48*A*a^7*b^8*c*d^7*g^3*i*
e^8 + 6*A*a^8*b^7*d^8*g^3*i*e^8 - 42*(b*x*e + a*e)*A*b^14*c^8*d*g^3*i*e^7/(
```

d*x + c) + 6*(b*x*e + a*e)*B*b^14*c^8*d*g^3*i*e^7/(d*x + c) + 336*(b*x*e + a*e)*A*a*b^13*c^7*d^2*g^3*i*e^7/(d*x + c) - 48*(b*x*e + a*e)*B*a*b^13*c^7*d ^2*g^3*i*e^7/(d*x + c) - 1176*(b*x*e + a*e)*A*a^2*b^12*c^6*d^3*g^3*i*e^7/(d *x + c) + 168*(b*x*e + a*e)*B*a^2*b^12*c^6*d^3*g^3*i*e^7/(d*x + c) + 2352*(b*x*e + a*e)*A*a^3*b^11*c^5*d^4*g^3*i*e^7/(d*x + c) - 336*(b*x*e + a*e)*B*a ^3*b^11*c^5*d^4*g^3*i*e^7/(d*x + c) - 2940*(b*x*e + a*e)*A*a^4*b^10*c^4*d^5 *g^3*i*e^7/(d*x + c) + 420*(b*x*e + a*e)*B*a^4*b^10*c^4*d^5*g^3*i*e^7/(d*x + c) + 2352*(b*x*e + a*e)*A*a^5*b^9*c^3*d^6*g^3*i*e^7/(d*x + c) - 336*(b*x* e + a*e)*B*a^5*b^9*c^3*d^6*g^3*i*e^7/(d*x + c) - 1176*(b*x*e + a*e)*A*a^6*b ^8*c^2*d^7*g^3*i*e^7/(d*x + c) + 168*(b*x*e + a*e)*B*a^6*b^8*c^2*d^7*g^3*i* e^7/(d*x + c) + 336*(b*x*e + a*e)*A*a^7*b^7*c*d^8*g^3*i*e^7/(d*x + c) - 48* (b*x*e + a*e)*B*a^7*b^7*c*d^8*g^3*i*e^7/(d*x + c) - 42*(b*x*e + a*e)*A*a^8* b^6*d^9*g^3*i*e^7/(d*x + c) + 6*(b*x*e + a*e)*B*a^8*b^6*d^9*g^3*i*e^7/(d*x + c) + 126*(b*x*e + a*e)^2*A*b^13*c^8*d^2*g^3*i*e^6/(d*x + c)^2 - 39*(b*x*e + a*e)^2*B*b^13*c^8*d^2*g^3*i*e^6/(d*x + c)^2 - 1008*(b*x*e + a*e)^2*A*a*b ^12*c^7*d^3*g^3*i*e^6/(d*x + c)^2 + 312*(b*x*e + a*e)^2*B*a*b^12*c^7*d^3*g^ 3*i*e^6/(d*x + c)^2 + 3528*(b*x*e + a*e)^2*A*a^2*b^11*c^6*d^4*g^3*i*e^6/(d* x + c)^2 - 1092*(b*x*e + a*e)^2*B*a^2*b^11*c^6*d^4*g^3*i*e^6/(d*x + c)^2 - 7056*(b*x*e + a*e)^2*A*a^3*b^10*c^5*d^5*g^3*i*e^6/(d*x + c)^2 + 2184*(b*x*e + a*e)^2*B*a^3*b^10*c^5*d^5*g^3*i*e^6/(d*x + c)^2 + 8820*(b*x*e + a*e)^2*A *a^4*b^9*c^4*d^6*g^3*i*e^6/(d*x + c)^2 - 2730*(b*x*e + a*e)^2*B*a^4*b^9*c^4 *d^6*g^3*i*e^6/(d*x + c)^2 - 7056*(b*x*e + a*e)^2*A*a^5*b^8*c^3*d^7*g^3*i*e ^6/(d*x + c)^2 + 2184*(b*x*e + a*e)^2*B*a^5*b^8*c^3*d^7*g^3*i*e^6/(d*x + c) ^2 + 3528*(b*x*e + a*e)^2*A*a^6*b^7*c^2*d^8*g^3*i*e^6/(d*x + c)^2 - 1092*(b *x*e + a*e)^2*B*a^6*b^7*c^2*d^8*g^3*i*e^6/(d*x + c)^2 - 1008*(b*x*e + a*e)^ 2*A*a^7*b^6*c*d^9*g^3*i*e^6/(d*x + c)^2 + 312*(b*x*e + a*e)^2*B*a^7*b^6*c*d ^9*g^3*i*e^6/(d*x + c)^2 + 126*(b*x*e + a*e)^2*A*a^8*b^5*d^10*g^3*i*e^6/(d* x + c)^2 - 39*(b*x*e + a*e)^2*B*a^8*b^5*d^10*g^3*i*e^6/(d*x + c)^2 - 210*(b *x*e + a*e)^3*A*b^12*c^8*d^3*g^3*i*e^5/(d*x + c)^3 + 107*(b*x*e + a*e)^3*B* b^12*c^8*d^3*g^3*i*e^5/(d*x + c)^3 + 1680*(b*x*e + a*e)^3*A*a*b^11*c^7*d^4* g^3*i*e^5/(d*x + c)^3 - 856*(b*x*e + a*e)^3*B*a*b^11*c^7*d^4*g^3*i*e^5/(d*x + c)^3 - 5880*(b*x*e + a*e)^3*A*a^2*b^10*c^6*d^5*g^3*i*e^5/(d*x + c)^3 + 2 996*(b*x*e + a*e)^3*B*a^2*b^10*c^6*d^5*g^3*i*e^5/(d*x + c)^3 + 11760*(b*x*e + a*e)^3*A*a^3*b^9*c^5*d^6*g^3*i*e^5/(d*x + c)^3 - 5992*(b*x*e + a*e)^3*B* a^3*b^9*c^5*d^6*g^3*i*e^5/(d*x + c)^3 - 14700*(b*x*e + a*e)^3*A*a^4*b^8*c^4 *d^7*g^3*i*e^5/(d*x + c)^3 + 7490*(b*x*e + a*e)^3*B*a^4*b^8*c^4*d^7*g^3*i*e ^5/(d*x + c)^3 + 11760*(b*x*e + a*e)^3*A*a^5*b^7*c^3*d^8*g^3*i*e^5/(d*x + c)^3 - 5992*(b*x*e + a*e)^3*B*a^5*b^7*c^3*d^8*g^3*i*e^5/(d*x + c)^3 - 5880*(b*x*e + a*e)^3*A*a^6*b^6*c^2*d^9*g^3*i*e^5/(d*x + c)^3 + 2996*(b*x*e + a*e) ^3*B*a^6*b^6*c^2*d^9*g^3*i*e^5/(d*x + c)^3 + 1680*(b*x*e + a*e)^3*A*a^7*b^5 *c*d^10*g^3*i*e^5/(d*x + c)^3 - 856*(b*x*e + a*e)^3*B*a^7*b^5*c*d^10*g^3*i* e^5/(d*x + c)^3 - 210*(b*x*e + a*e)^3*A*a^8*b^4*d^11*g^3*i*e^5/(d*x + c)^3 + 107*(b*x*e + a*e)^3*B*a^8*b^4*d^11*g^3*i*e^5/(d*x + c)^3 - 107*(b*x*e + a *e)^4*B*b^11*c^8*d^4*g^3*i*e^4/(d*x + c)^4 + 856*(b*x*e + a*e)^4*B*a*b^10*c ^7*d^5*g^3*i*e^4/(d*x + c)^4 - 2996*(b*x*e + a*e)^4*B*a^2*b^9*c^6*d^6*g^3*i *e^4/(d*x + c)^4 + 5992*(b*x*e + a*e)^4*B*a^3*b^8*c^5*d^7*g^3*i*e^4/(d*x + c)^4 - 7490*(b*x*e + a*e)^4*B*a^4*b^7*c^4*d^8*g^3*i*e^4/(d*x + c)^4 + 5992* (b*x*e + a*e)^4*B*a^5*b^6*c^3*d^9*g^3*i*e^4/(d*x + c)^4 - 2996*(b*x*e + a*e)^4*B*a^6*b^5*c^2*d^10*g^3*i*e^4/(d*x + c)^4 + 856*(b*x*e + a*e)^4*B*a^7*b^ 4*c*d^11*g^3*i*e^4/(d*x + c)^4 - 107*(b*x*e + a*e)^4*B*a^8*b^3*d^12*g^3*i*e ^4/(d*x + c)^4 + 39*(b*x*e + a*e)^5*B*b^10*c^8*d^5*g^3*i*e^3/(d*x + c)^5 - 312*(b*x*e + a*e)^5*B*a*b^9*c^7*d^6*g^3*i*e^3/(d*x + c)^5 + 1092*(b*x*e + a *e)^5*B*a^2*b^8*c^6*d^7*g^3*i*e^3/(d*x + c)^5 - 2184*(b*x*e + a*e)^5*B*a^3* b^7*c^5*d^8*g^3*i*e^3/(d*x + c)^5 + 2730*(b*x*e + a*e)^5*B*a^4*b^6*c^4*d^9* g^3*i*e^3/(d*x + c)^5 - 2184*(b*x*e + a*e)^5*B*a^5*b^5*c^3*d^10*g^3*i*e^3/(d*x + c)^5 + 1092*(b*x*e + a*e)^5*B*a^6*b^4*c^2*d^11*g^3*i*e^3/(d*x + c)^5 - 312*(b*x*e + a*e)^5*B*a^7*b^3*c*d^12*g^3*i*e^3/(d*x + c)^5 + 39*(b*x*e + a*e)^5*B*a^8*b^2*d^13*g^3*i*e^3/(d*x + c)^5 - 6*(b*x*e + a*e)^6*B*b^9*c^8*d ^6*g^3*i*e^2/(d*x + c)^6 + 48*(b*x*e + a*e)^6*B*a*b^8*c^7*d^7*g^3*i*e^2/(d*

```
x + c)^6 - 168*(b*x*e + a*e)^6*B*a^2*b^7*c^6*d^8*g^3*i*e^2/(d*x + c)^6 + 33
6*(b*x*e + a*e)^6*B*a^3*b^6*c^5*d^9*g^3*i*e^2/(d*x + c)^6 - 420*(b*x*e + a*
e)^6*B*a^4*b^5*c^4*d^10*g^3*i*e^2/(d*x + c)^6 + 336*(b*x*e + a*e)^6*B*a^5*b
^4*c^3*d^11*g^3*i*e^2/(d*x + c)^6 - 168*(b*x*e + a*e)^6*B*a^6*b^3*c^2*d^12*
g^3*i*e^2/(d*x + c)^6 + 48*(b*x*e + a*e)^6*B*a^7*b^2*c*d^13*g^3*i*e^2/(d*x
+ c)^6 - 6*(b*x*e + a*e)^6*B*a^8*b*d^14*g^3*i*e^2/(d*x + c)^6)*(b*c/((b*c*e
 - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^11*d^4*e^7 -
 7*(b*x*e + a*e)*b^10*d^5*e^6/(d*x + c) + 21*(b*x*e + a*e)^2*b^9*d^6*e^5/(d
*x + c)^2 - 35*(b*x*e + a*e)^3*b^8*d^7*e^4/(d*x + c)^3 + 35*(b*x*e + a*e)^4
*b^7*d^8*e^3/(d*x + c)^4 - 21*(b*x*e + a*e)^5*b^6*d^9*e^2/(d*x + c)^5 + 7*(
b*x*e + a*e)^6*b^5*d^10*e/(d*x + c)^6 - (b*x*e + a*e)^7*b^4*d^11/(d*x + c)^
7)
```

maple [B] time = 0.20, size = 11172, normalized size = 24.45

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

```
[Out] result too large to display
```

maxima [B] time = 1.84, size = 2637, normalized size = 5.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="maxima")
```

```
[Out] 1/7*A*b^3*d^3*g^3*i^3*x^7 + 1/2*A*b^3*c*d^2*g^3*i^3*x^6 + 1/2*A*a*b^2*d^3*g
^3*i^3*x^6 + 3/5*A*b^3*c^2*d*g^3*i^3*x^5 + 9/5*A*a*b^2*c*d^2*g^3*i^3*x^5 +
3/5*A*a^2*b*d^3*g^3*i^3*x^5 + 1/4*A*b^3*c^3*g^3*i^3*x^4 + 9/4*A*a*b^2*c^2*d
*g^3*i^3*x^4 + 9/4*A*a^2*b*c*d^2*g^3*i^3*x^4 + 1/4*A*a^3*d^3*g^3*i^3*x^4 +
A*a*b^2*c^3*g^3*i^3*x^3 + 3*A*a^2*b*c^2*d*g^3*i^3*x^3 + A*a^3*c*d^2*g^3*i^3
*x^3 + 3/2*A*a^2*b*c^3*g^3*i^3*x^2 + 3/2*A*a^3*c^2*d*g^3*i^3*x^2 + (x*log(b
*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*B*a^
3*c^3*g^3*i^3 + 3/2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x
 + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*a^2*b*c^3*g^3*i^3
 + 1/2*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3
 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2
)*x)/(b^2*d^2))*B*a*b^2*c^3*g^3*i^3 + 1/24*(6*x^4*log(b*e*x/(d*x + c) + a*e
/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d
^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)
*x)/(b^3*d^3))*B*b^3*c^3*g^3*i^3 + 3/2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x
+ c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*
B*a^3*c^2*d*g^3*i^3 + 3/2*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a
^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2
*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a^2*b*c^2*d*g^3*i^3 + 3/8*(6*x^4*log(b
*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x +
c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6
*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a*b^2*c^2*d*g^3*i^3 + 1/20*(12*x^5*log
(b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*
x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)
*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))
*B*b^3*c^2*d*g^3*i^3 + 1/2*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*
a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 -
2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a^3*c*d^2*g^3*i^3 + 3/8*(6*x^4*log(b*
e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c
)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*
```

```
(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a^2*b*c*d^2*g^3*i^3 + 3/20*(12*x^5*log(
b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x
 + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*
x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*
B*a*b^2*c*d^2*g^3*i^3 + 1/120*(60*x^6*log(b*e*x/(d*x + c) + a*e/(d*x + c))
- 60*a^6*log(b*x + a)/b^6 + 60*c^6*log(d*x + c)/d^6 - (12*(b^5*c*d^4 - a*b^
4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2
*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5
*d^5))*B*b^3*c*d^2*g^3*i^3 + 1/24*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c
)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^
2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*
d^3))*B*a^3*d^3*g^3*i^3 + 1/20*(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c))
 + 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^
3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*
x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*B*a^2*b*d^3*g^3*i^3 + 1/120*(60*
x^6*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 60*a^6*log(b*x + a)/b^6 + 60*c^6
*log(d*x + c)/d^6 - (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2
*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*
d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5))*B*a*b^2*d^3*g^3*i^3 + 1/420
*(60*x^7*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 60*a^7*log(b*x + a)/b^7 - 6
0*c^7*log(d*x + c)/d^7 - (10*(b^6*c*d^5 - a*b^5*d^6)*x^6 - 12*(b^6*c^2*d^4
- a^2*b^4*d^6)*x^5 + 15*(b^6*c^3*d^3 - a^3*b^3*d^6)*x^4 - 20*(b^6*c^4*d^2 -
 a^4*b^2*d^6)*x^3 + 30*(b^6*c^5*d - a^5*b*d^6)*x^2 - 60*(b^6*c^6 - a^6*d^6)
*x)/(b^6*d^6))*B*b^3*d^3*g^3*i^3 + A*a^3*c^3*g^3*i^3*x
```

mupad [B] time = 6.58, size = 4347, normalized size = 9.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] x*(((140*a*d + 140*b*c)*(((140*a*d + 140*b*c)*((a*c*((((b^2*d^2*g^3*i^3*(28
*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b
*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*
A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^
3))/(b*d) - ((140*a*d + 140*b*c)*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3 + 3
*B*a^3*d^3 - 3*B*b^3*c^3 + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*a*b^
2*c^2*d + 6*B*a^2*b*c*d^2))/5 + ((140*a*d + 140*b*c)*((((b^2*d^2*g^3*i^3*(2
8*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*
b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12
*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i
^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*
c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(b*d)))/(140*b*d) + (
g^3*i^3*(4*A*a^4*d^4 + 4*A*b^4*c^4 + B*a^4*d^4 - B*b^4*c^4 + 144*A*a^2*b^2*
c^2*d^2 + 64*A*a*b^3*c^3*d + 64*A*a^3*b*c*d^3 - 8*B*a*b^3*c^3*d + 8*B*a^3*b
*c*d^3))/(4*b*d)))/(140*b*d) + (a*c*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3
+ 3*B*a^3*d^3 - 3*B*b^3*c^3 + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*a
*b^2*c^2*d + 6*B*a^2*b*c*d^2))/5 + ((140*a*d + 140*b*c)*((((b^2*d^2*g^3*i^3
*(28*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 1
40*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 +
 12*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^
3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B
*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(b*d)))/(b*d) - (a
*c*g^3*i^3*(4*A*a^3*d^3 + 4*A*b^3*c^3 + B*a^3*d^3 - B*b^3*c^3 + 24*A*a*b^2*
c^2*d + 24*A*a^2*b*c*d^2 - 2*B*a*b^2*c^2*d + 2*B*a^2*b*c*d^2))/(b*d)))/(140
*b*d) - (a*c*((a*c*((((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*c
))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(1
40*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2
 + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(b*d) - ((140*a*d + 140*b*c)*
```

```
((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3 + 3*B*a^3*d^3 - 3*B*b^3*c^3 + 120*A*
a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*a*b^2*c^2*d + 6*B*a^2*b*c*d^2))/5 + (
(140*a*d + 140*b*c)*((((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*
c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(
140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^
2 + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g
^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a
*d + 140*b*c))/140))/(b*d)))/(140*b*d) + (g^3*i^3*(4*A*a^4*d^4 + 4*A*b^4*c^
4 + B*a^4*d^4 - B*b^4*c^4 + 144*A*a^2*b^2*c^2*d^2 + 64*A*a*b^3*c^3*d + 64*A
*a^3*b*c*d^3 - 8*B*a*b^3*c^3*d + 8*B*a^3*b*c*d^3))/(4*b*d)))/(b*d) + (a^2*c
^2*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + 3*B*a^2*d^2 - 3*B*b^2*c^2 + 32*A*
a*b*c*d))/(2*b*d)) + x^6*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B
*b*c))/42 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/840) + x^3*((a*c*((((b^
2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3
*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(1
2*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/2 + A*a
*b^2*c*d^2*g^3*i^3))/(3*b*d) - ((140*a*d + 140*b*c)*((g^3*i^3*(20*A*a^3*d^3
 + 20*A*b^3*c^3 + 3*B*a^3*d^3 - 3*B*b^3*c^3 + 120*A*a*b^2*c^2*d + 120*A*a^2
*b*c*d^2 - 6*B*a*b^2*c^2*d + 6*B*a^2*b*c*d^2))/5 + ((140*a*d + 140*b*c)*(((
(b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*
i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3
*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/2 +
A*a*b^2*c*d^2*g^3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A
*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(b
*d)))/(420*b*d) + (g^3*i^3*(4*A*a^4*d^4 + 4*A*b^4*c^4 + B*a^4*d^4 - B*b^4*c
^4 + 144*A*a^2*b^2*c^2*d^2 + 64*A*a*b^3*c^3*d + 64*A*a^3*b*c*d^3 - 8*B*a*b^
3*c^3*d + 8*B*a^3*b*c*d^3))/(12*b*d)) - x^2*(((140*a*d + 140*b*c)*((a*c*(((
(b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*
i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3
*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/2 +
A*a*b^2*c*d^2*g^3*i^3))/(b*d) - ((140*a*d + 140*b*c)*((g^3*i^3*(20*A*a^3*d^
3 + 20*A*b^3*c^3 + 3*B*a^3*d^3 - 3*B*b^3*c^3 + 120*A*a*b^2*c^2*d + 120*A*a^
2*b*c*d^2 - 6*B*a*b^2*c^2*d + 6*B*a^2*b*c*d^2))/5 + ((140*a*d + 140*b*c)*((
((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3
*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^
3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/2 +
 A*a*b^2*c*d^2*g^3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*
A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(
b*d)))/(140*b*d) + (g^3*i^3*(4*A*a^4*d^4 + 4*A*b^4*c^4 + B*a^4*d^4 - B*b^4*
c^4 + 144*A*a^2*b^2*c^2*d^2 + 64*A*a*b^3*c^3*d + 64*A*a^3*b*c*d^3 - 8*B*a*b
^3*c^3*d + 8*B*a^3*b*c*d^3))/(4*b*d)))/(280*b*d) + (a*c*((g^3*i^3*(20*A*a^3
*d^3 + 20*A*b^3*c^3 + 3*B*a^3*d^3 - 3*B*b^3*c^3 + 120*A*a*b^2*c^2*d + 120*A
*a^2*b*c*d^2 - 6*B*a*b^2*c^2*d + 6*B*a^2*b*c*d^2))/5 + ((140*a*d + 140*b*c)
*((((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*
g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3
*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/
2 + A*a*b^2*c*d^2*g^3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d +
28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)
)/(b*d)))/(2*b*d) - (a*c*g^3*i^3*(4*A*a^3*d^3 + 4*A*b^3*c^3 + B*a^3*d^3 - B
*b^3*c^3 + 24*A*a*b^2*c^2*d + 24*A*a^2*b*c*d^2 - 2*B*a*b^2*c^2*d + 2*B*a^2*
b*c*d^2))/(2*b*d)) - x^5*((((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d -
 B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*
c))/(700*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2 - B*b
^2*c^2 + 32*A*a*b*c*d))/10 + (A*a*b^2*c*d^2*g^3*i^3)/5) + log((e*(a + b*x))
/(c + d*x))*((B*g^3*i^3*x^4*(a^3*d^3 + b^3*c^3 + 9*a*b^2*c^2*d + 9*a^2*b*c*
d^2))/4 + B*a^3*c^3*g^3*i^3*x + (B*b^3*d^3*g^3*i^3*x^7)/7 + (3*B*a^2*c^2*g^
3*i^3*x^2*(a*d + b*c))/2 + (B*b^2*d^2*g^3*i^3*x^6*(a*d + b*c))/2 + B*a*c*g^
3*i^3*x^3*(a^2*d^2 + b^2*c^2 + 3*a*b*c*d) + (3*B*b*d*g^3*i^3*x^5*(a^2*d^2 +
 b^2*c^2 + 3*a*b*c*d))/5) + x^4*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3 + 3*
```

```
B*a^3*d^3 - 3*B*b^3*c^3 + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*a*b^2
*c^2*d + 6*B*a^2*b*c*d^2))/20 + ((140*a*d + 140*b*c)*((((b^2*d^2*g^3*i^3*(2
8*A*a*d + 28*A*b*c + B*a*d - B*b*c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*
b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12
*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i
^3))/(560*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d - B*b*
c))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(4*b*d)) - (log(a + b
*x)*(B*a^7*d^3*g^3*i^3 - 35*B*a^4*b^3*c^3*g^3*i^3 - 7*B*a^6*b*c*d^2*g^3*i^3
 + 21*B*a^5*b^2*c^2*d*g^3*i^3))/(140*b^4) + (log(c + d*x)*(B*b^3*c^7*g^3*i^
3 - 35*B*a^3*c^4*d^3*g^3*i^3 - 7*B*a*b^2*c^6*d*g^3*i^3 + 21*B*a^2*b*c^5*d^2
*g^3*i^3))/(140*d^4) + (A*b^3*d^3*g^3*i^3*x^7)/7
```

sympy [B] time = 18.76, size = 2161, normalized size = 4.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*b**3*d**3*g**3*i**3*x**7/7 - B*a**4*g**3*i**3*(a**3*d**3 - 7*a**2*b*c*d**
2 + 21*a*b**2*c**2*d - 35*b**3*c**3)*log(x + (B*a**7*c*d**6*g**3*i**3 - 7*B
*a**6*b*c**2*d**5*g**3*i**3 + 21*B*a**5*b**2*c**3*d**4*g**3*i**3 + B*a**5*d
**4*g**3*i**3*(a**3*d**3 - 7*a**2*b*c*d**2 + 21*a*b**2*c**2*d - 35*b**3*c**
3)/b - 70*B*a**4*b**3*c**4*d**3*g**3*i**3 - B*a**4*c*d**3*g**3*i**3*(a**3*d
**3 - 7*a**2*b*c*d**2 + 21*a*b**2*c**2*d - 35*b**3*c**3) + 21*B*a**3*b**4*c
**5*d**2*g**3*i**3 - 7*B*a**2*b**5*c**6*d*g**3*i**3 + B*a*b**6*c**7*g**3*i*
*3)/(B*a**7*d**7*g**3*i**3 - 7*B*a**6*b*c*d**6*g**3*i**3 + 21*B*a**5*b**2*c
**2*d**5*g**3*i**3 - 35*B*a**4*b**3*c**3*d**4*g**3*i**3 - 35*B*a**3*b**4*c*
*4*d**3*g**3*i**3 + 21*B*a**2*b**5*c**5*d**2*g**3*i**3 - 7*B*a*b**6*c**6*d*
g**3*i**3 + B*b**7*c**7*g**3*i**3))/(140*b**4) - B*c**4*g**3*i**3*(35*a**3*
d**3 - 21*a**2*b*c*d**2 + 7*a*b**2*c**2*d - b**3*c**3)*log(x + (B*a**7*c*d*
*6*g**3*i**3 - 7*B*a**6*b*c**2*d**5*g**3*i**3 + 21*B*a**5*b**2*c**3*d**4*g*
*3*i**3 - 70*B*a**4*b**3*c**4*d**3*g**3*i**3 + 21*B*a**3*b**4*c**5*d**2*g**
3*i**3 - 7*B*a**2*b**5*c**6*d*g**3*i**3 + B*a*b**6*c**7*g**3*i**3 + B*a*b**
3*c**4*g**3*i**3*(35*a**3*d**3 - 21*a**2*b*c*d**2 + 7*a*b**2*c**2*d - b**3*
c**3) - B*b**4*c**5*g**3*i**3*(35*a**3*d**3 - 21*a**2*b*c*d**2 + 7*a*b**2*c
**2*d - b**3*c**3)/d)/(B*a**7*d**7*g**3*i**3 - 7*B*a**6*b*c*d**6*g**3*i**3
+ 21*B*a**5*b**2*c**2*d**5*g**3*i**3 - 35*B*a**4*b**3*c**3*d**4*g**3*i**3 -
 35*B*a**3*b**4*c**4*d**3*g**3*i**3 + 21*B*a**2*b**5*c**5*d**2*g**3*i**3 -
7*B*a*b**6*c**6*d*g**3*i**3 + B*b**7*c**7*g**3*i**3))/(140*d**4) + x**6*(A*
a*b**2*d**3*g**3*i**3/2 + A*b**3*c*d**2*g**3*i**3/2 + B*a*b**2*d**3*g**3*i*
*3/42 - B*b**3*c*d**2*g**3*i**3/42) + x**5*(3*A*a**2*b*d**3*g**3*i**3/5 + 9
*A*a*b**2*c*d**2*g**3*i**3/5 + 3*A*b**3*c**2*d*g**3*i**3/5 + B*a**2*b*d**3*
g**3*i**3/14 - B*b**3*c**2*d*g**3*i**3/14) + x**4*(A*a**3*d**3*g**3*i**3/4
+ 9*A*a**2*b*c*d**2*g**3*i**3/4 + 9*A*a*b**2*c**2*d*g**3*i**3/4 + A*b**3*c*
*3*g**3*i**3/4 + 17*B*a**3*d**3*g**3*i**3/280 + 7*B*a**2*b*c*d**2*g**3*i**3
/40 - 7*B*a*b**2*c**2*d*g**3*i**3/40 - 17*B*b**3*c**3*g**3*i**3/280) + x**3
*(A*a**3*c*d**2*g**3*i**3 + 3*A*a**2*b*c**2*d*g**3*i**3 + A*a*b**2*c**3*g**
3*i**3 + B*a**4*d**3*g**3*i**3/(420*b) + 7*B*a**3*c*d**2*g**3*i**3/30 - 7*B
*a*b**2*c**3*g**3*i**3/30 - B*b**3*c**4*g**3*i**3/(420*d)) + x**2*(3*A*a**3
*c**2*d*g**3*i**3/2 + 3*A*a**2*b*c**3*g**3*i**3/2 - B*a**5*d**3*g**3*i**3/(
280*b**2) + B*a**4*c*d**2*g**3*i**3/(40*b) + 3*B*a**3*c**2*d*g**3*i**3/10 -
 3*B*a**2*b*c**3*g**3*i**3/10 - B*a*b**2*c**4*g**3*i**3/(40*d) + B*b**3*c**
5*g**3*i**3/(280*d**2)) + x*(A*a**3*c**3*g**3*i**3 + B*a**6*d**3*g**3*i**3/
(140*b**3) - B*a**5*c*d**2*g**3*i**3/(20*b**2) + 3*B*a**4*c**2*d*g**3*i**3/
(20*b) - 3*B*a**2*b*c**4*g**3*i**3/(20*d) + B*a*b**2*c**5*g**3*i**3/(20*d**
2) - B*b**3*c**6*g**3*i**3/(140*d**3)) + (B*a**3*c**3*g**3*i**3*x + 3*B*a**
3*c**2*d*g**3*i**3*x**2/2 + B*a**3*c*d**2*g**3*i**3*x**3 + B*a**3*d**3*g**3
*i**3*x**4/4 + 3*B*a**2*b*c**3*g**3*i**3*x**2/2 + 3*B*a**2*b*c**2*d*g**3*i*
*3*x**3 + 9*B*a**2*b*c*d**2*g**3*i**3*x**4/4 + 3*B*a**2*b*d**3*g**3*i**3*x*
```

```
*5/5 + B*a*b**2*c**3*g**3*i**3*x**3 + 9*B*a*b**2*c**2*d*g**3*i**3*x**4/4 +
9*B*a*b**2*c*d**2*g**3*i**3*x**5/5 + B*a*b**2*d**3*g**3*i**3*x**6/2 + B*b**
3*c**3*g**3*i**3*x**4/4 + 3*B*b**3*c**2*d*g**3*i**3*x**5/5 + B*b**3*c*d**2*
g**3*i**3*x**6/2 + B*b**3*d**3*g**3*i**3*x**7/7)*log(e*(a + b*x)/(c + d*x))
```

3.21 $\int (ag+bgx)^2(ci+dix)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right) dx$

Optimal. Leaf size=371

$$\frac{b^2g^2i^3(c+dx)^6\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{6d^3}+\frac{g^2i^3(c+dx)^4(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4d^3}-\frac{2bg^2i^3(c+dx)^5(bc-ad)}{5d^3}$$

```
[Out] -1/60*B*(-a*d+b*c)^5*g^2*i^3*x/b^3/d^2-1/120*B*(-a*d+b*c)^4*g^2*i^3*(d*x+c)
^2/b^2/d^3-1/180*B*(-a*d+b*c)^3*g^2*i^3*(d*x+c)^3/b/d^3+7/120*B*(-a*d+b*c)^
2*g^2*i^3*(d*x+c)^4/d^3-1/30*b*B*(-a*d+b*c)*g^2*i^3*(d*x+c)^5/d^3-1/60*B*(-
a*d+b*c)^6*g^2*i^3*ln((b*x+a)/(d*x+c))/b^4/d^3+1/4*(-a*d+b*c)^2*g^2*i^3*(d*
x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^3-2/5*b*(-a*d+b*c)*g^2*i^3*(d*x+c)^5*(
A+B*ln(e*(b*x+a)/(d*x+c)))/d^3+1/6*b^2*g^2*i^3*(d*x+c)^6*(A+B*ln(e*(b*x+a)/
(d*x+c)))/d^3-1/60*B*(-a*d+b*c)^6*g^2*i^3*ln(d*x+c)/b^4/d^3
```

Rubi [A] time = 0.67, antiderivative size = 330, normalized size of antiderivative = 0.89, number of steps used = 14, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2528, 2525, 12, 43}

$$\frac{b^2g^2i^3(c+dx)^6\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{6d^3}+\frac{g^2i^3(c+dx)^4(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4d^3}-\frac{2bg^2i^3(c+dx)^5(bc-ad)}{5d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] -(B*(b*c - a*d)^5*g^2*i^3*x)/(60*b^3*d^2) - (B*(b*c - a*d)^4*g^2*i^3*(c + d
*x)^2)/(120*b^2*d^3) - (B*(b*c - a*d)^3*g^2*i^3*(c + d*x)^3)/(180*b*d^3) +
(7*B*(b*c - a*d)^2*g^2*i^3*(c + d*x)^4)/(120*d^3) - (b*B*(b*c - a*d)*g^2*i^
3*(c + d*x)^5)/(30*d^3) - (B*(b*c - a*d)^6*g^2*i^3*Log[a + b*x])/(60*b^4*d^
3) + ((b*c - a*d)^2*g^2*i^3*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]
))/(4*d^3) - (2*b*(b*c - a*d)*g^2*i^3*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/
(c + d*x)]))/(5*d^3) + (b^2*g^2*i^3*(c + d*x)^6*(A + B*Log[(e*(a + b*x))/(c
 + d*x)]))/(6*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (21c+21dx)^3(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx = \int\left(\frac{(-bc+ad)^2g^2(21c+21dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^2}\right.$$

$$= \frac{\left(b^2g^2\right)\int(21c+21dx)^5\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{441d^2} - \frac{(2b}{}$$

$$= \frac{9261(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4d^3} - \frac{185}{}$$

$$= \frac{9261(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4d^3} - \frac{185}{}$$

$$= \frac{9261(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4d^3} - \frac{185}{}$$

$$= -\frac{3087B(bc-ad)^5g^2x}{20b^3d^2} - \frac{3087B(bc-ad)^4g^2(c+dx)^2}{40b^2d^3} -$$

Mathematica [A] time = 0.32, size = 429, normalized size = 1.16

$$\frac{g^2i^3\left(60b^6(c+dx)^6\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-144b^5(c+dx)^5(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+90b^4(c+dx)^4(bc-ad\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x
)]),x]
```

```
[Out] (g^2*i^3*(-15*B*(b*c - a*d)^3*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c
 + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]) + 12*B*(b*c -
 a*d)^2*(12*b*d*(b*c - a*d)^3*x + 6*b^2*(b*c - a*d)^2*(c + d*x)^2 + 4*b^3*(
b*c - a*d)*(c + d*x)^3 + 3*b^4*(c + d*x)^4 + 12*(b*c - a*d)^4*Log[a + b*x])
 - B*(b*c - a*d)*(60*b*d*(b*c - a*d)^4*x + 30*b^2*(b*c - a*d)^3*(c + d*x)^2
 + 20*b^3*(b*c - a*d)^2*(c + d*x)^3 + 15*b^4*(b*c - a*d)*(c + d*x)^4 + 12*b
^5*(c + d*x)^5 + 60*(b*c - a*d)^5*Log[a + b*x]) + 90*b^4*(b*c - a*d)^2*(c +
 d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 144*b^5*(b*c - a*d)*(c + d*x
)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 60*b^6*(c + d*x)^6*(A + B*Log[(e
*(a + b*x))/(c + d*x)])))/(360*b^4*d^3)
```

fricas [B] time = 1.21, size = 722, normalized size = 1.95

$$\frac{60\,Ab^6d^6g^2i^3x^6+12\left((18\,A-B)b^6cd^5+(12\,A+B)ab^5d^6\right)g^2i^3x^5+3\left((90\,A-13\,B)b^6c^2d^4+6\,(30\,A+B)ab^5cd^5+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="fricas")
```

```
[Out] 1/360*(60*A*b^6*d^6*g^2*i^3*x^6 + 12*((18*A - B)*b^6*c*d^5 + (12*A + B)*a*b
^5*d^6)*g^2*i^3*x^5 + 3*((90*A - 13*B)*b^6*c^2*d^4 + 6*(30*A + B)*a*b^5*c*d
^5 + (30*A + 7*B)*a^2*b^4*d^6)*g^2*i^3*x^4 + 2*((60*A - 19*B)*b^6*c^3*d^3 +
 3*(120*A - 7*B)*a*b^5*c^2*d^4 + 3*(60*A + 13*B)*a^2*b^4*c*d^5 + B*a^3*b^3*
d^6)*g^2*i^3*x^3 - 3*(B*b^6*c^4*d^2 - 2*(60*A - 17*B)*a*b^5*c^3*d^3 - 30*(6
*A + B)*a^2*b^4*c^2*d^4 - 6*B*a^3*b^3*c*d^5 + B*a^4*b^2*d^6)*g^2*i^3*x^2 +
6*(B*b^6*c^5*d - 6*B*a*b^5*c^4*d^2 + 5*(12*A - B)*a^2*b^4*c^3*d^3 + 15*B*a^
3*b^3*c^2*d^4 - 6*B*a^4*b^2*c*d^5 + B*a^5*b*d^6)*g^2*i^3*x + 6*(20*B*a^3*b^
3*c^3*d^3 - 15*B*a^4*b^2*c^2*d^4 + 6*B*a^5*b*c*d^5 - B*a^6*d^6)*g^2*i^3*log
(b*x + a) - 6*(B*b^6*c^6 - 6*B*a*b^5*c^5*d + 15*B*a^2*b^4*c^4*d^2)*g^2*i^3*
log(d*x + c) + 6*(10*B*b^6*d^6*g^2*i^3*x^6 + 60*B*a^2*b^4*c^3*d^3*g^2*i^3*x
 + 12*(3*B*b^6*c*d^5 + 2*B*a*b^5*d^6)*g^2*i^3*x^5 + 15*(3*B*b^6*c^2*d^4 + 6
*B*a*b^5*c*d^5 + B*a^2*b^4*d^6)*g^2*i^3*x^4 + 20*(B*b^6*c^3*d^3 + 6*B*a*b^5
*c^2*d^4 + 3*B*a^2*b^4*c*d^5)*g^2*i^3*x^3 + 30*(2*B*a*b^5*c^3*d^3 + 3*B*a^2
*b^4*c^2*d^4)*g^2*i^3*x^2)*log((b*e*x + a*e)/(d*x + c)))/(b^4*d^3)
```

giac [B] time = 1.97, size = 7963, normalized size = 21.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="giac")
```

```
[Out] -1/360*(6*B*b^13*c^7*g^2*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 42*B
*a*b^12*c^6*d*g^2*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 126*B*a^2*b
^11*c^5*d^2*g^2*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 210*B*a^3*b^1
0*c^4*d^3*g^2*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 210*B*a^4*b^9*c
^3*d^4*g^2*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 126*B*a^5*b^8*c^2*
d^5*g^2*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 42*B*a^6*b^7*c*d^6*g^
2*i*e^7*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 6*B*a^7*b^6*d^7*g^2*i*e^7*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 36*(b*x*e + a*e)*B*b^12*c^7*d*g^2*i*
e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 252*(b*x*e + a*e)*B*a
*b^11*c^6*d^2*g^2*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 7
56*(b*x*e + a*e)*B*a^2*b^10*c^5*d^3*g^2*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d
*x + c))/(d*x + c) + 1260*(b*x*e + a*e)*B*a^3*b^9*c^4*d^4*g^2*i*e^6*log(-b*
e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 1260*(b*x*e + a*e)*B*a^4*b^8*c^3
*d^5*g^2*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 756*(b*x*e
 + a*e)*B*a^5*b^7*c^2*d^6*g^2*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(
d*x + c) - 252*(b*x*e + a*e)*B*a^6*b^6*c*d^7*g^2*i*e^6*log(-b*e + (b*x*e +
a*e)*d/(d*x + c))/(d*x + c) + 36*(b*x*e + a*e)*B*a^7*b^5*d^8*g^2*i*e^6*log(
-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 90*(b*x*e + a*e)^2*B*b^11*c^7
*d^2*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 630*(b*x
*e + a*e)^2*B*a*b^10*c^6*d^3*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)
)/(d*x + c)^2 + 1890*(b*x*e + a*e)^2*B*a^2*b^9*c^5*d^4*g^2*i*e^5*log(-b*e +
 (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 3150*(b*x*e + a*e)^2*B*a^3*b^8*c^
4*d^5*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 3150*(b
*x*e + a*e)^2*B*a^4*b^7*c^3*d^6*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x +
 c))/(d*x + c)^2 - 1890*(b*x*e + a*e)^2*B*a^5*b^6*c^2*d^7*g^2*i*e^5*log(-b*
e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 630*(b*x*e + a*e)^2*B*a^6*b^5*
c*d^8*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 90*(b*x
*e + a*e)^2*B*a^7*b^4*d^9*g^2*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(
d*x + c)^2 - 120*(b*x*e + a*e)^3*B*b^10*c^7*d^3*g^2*i*e^4*log(-b*e + (b*x*e
 + a*e)*d/(d*x + c))/(d*x + c)^3 + 840*(b*x*e + a*e)^3*B*a*b^9*c^6*d^4*g^2*
i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 2520*(b*x*e + a*e
)^3*B*a^2*b^8*c^5*d^5*g^2*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x
+ c)^3 + 4200*(b*x*e + a*e)^3*B*a^3*b^7*c^4*d^6*g^2*i*e^4*log(-b*e + (b*x*e
 + a*e)*d/(d*x + c))/(d*x + c)^3 - 4200*(b*x*e + a*e)^3*B*a^4*b^6*c^3*d^7*g
^2*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 2520*(b*x*e +
a*e)^3*B*a^5*b^5*c^2*d^8*g^2*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d
```

```
*x + c)^3 - 840*(b*x*e + a*e)^3*B*a^6*b^4*c*d^9*g^2*i*e^4*log(-b*e + (b*x*e
 + a*e)*d/(d*x + c))/(d*x + c)^3 + 120*(b*x*e + a*e)^3*B*a^7*b^3*d^10*g^2*i
*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 90*(b*x*e + a*e)^4
*B*b^9*c^7*d^4*g^2*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4
- 630*(b*x*e + a*e)^4*B*a*b^8*c^6*d^5*g^2*i*e^3*log(-b*e + (b*x*e + a*e)*d/
(d*x + c))/(d*x + c)^4 + 1890*(b*x*e + a*e)^4*B*a^2*b^7*c^5*d^6*g^2*i*e^3*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 3150*(b*x*e + a*e)^4*B*a
^3*b^6*c^4*d^7*g^2*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4
+ 3150*(b*x*e + a*e)^4*B*a^4*b^5*c^3*d^8*g^2*i*e^3*log(-b*e + (b*x*e + a*e)
*d/(d*x + c))/(d*x + c)^4 - 1890*(b*x*e + a*e)^4*B*a^5*b^4*c^2*d^9*g^2*i*e^
3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 630*(b*x*e + a*e)^4*B
*a^6*b^3*c*d^10*g^2*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4
 - 90*(b*x*e + a*e)^4*B*a^7*b^2*d^11*g^2*i*e^3*log(-b*e + (b*x*e + a*e)*d/(
d*x + c))/(d*x + c)^4 - 36*(b*x*e + a*e)^5*B*b^8*c^7*d^5*g^2*i*e^2*log(-b*e
 + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 252*(b*x*e + a*e)^5*B*a*b^7*c^6
*d^6*g^2*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 756*(b*x
*e + a*e)^5*B*a^2*b^6*c^5*d^7*g^2*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c
))/(d*x + c)^5 + 1260*(b*x*e + a*e)^5*B*a^3*b^5*c^4*d^8*g^2*i*e^2*log(-b*e
+ (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 1260*(b*x*e + a*e)^5*B*a^4*b^4*c
^3*d^9*g^2*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 756*(b
*x*e + a*e)^5*B*a^5*b^3*c^2*d^10*g^2*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x
+ c))/(d*x + c)^5 - 252*(b*x*e + a*e)^5*B*a^6*b^2*c*d^11*g^2*i*e^2*log(-b*e
 + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 36*(b*x*e + a*e)^5*B*a^7*b*d^12
*g^2*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 6*(b*x*e + a
*e)^6*B*b^7*c^7*d^6*g^2*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)
^6 - 42*(b*x*e + a*e)^6*B*a*b^6*c^6*d^7*g^2*i*e*log(-b*e + (b*x*e + a*e)*d/
(d*x + c))/(d*x + c)^6 + 126*(b*x*e + a*e)^6*B*a^2*b^5*c^5*d^8*g^2*i*e*log(
-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 - 210*(b*x*e + a*e)^6*B*a^3*b
^4*c^4*d^9*g^2*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 + 210*
(b*x*e + a*e)^6*B*a^4*b^3*c^3*d^10*g^2*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x
+ c))/(d*x + c)^6 - 126*(b*x*e + a*e)^6*B*a^5*b^2*c^2*d^11*g^2*i*e*log(-b*e
 + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 + 42*(b*x*e + a*e)^6*B*a^6*b*c*d^
12*g^2*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6 - 6*(b*x*e + a
*e)^6*B*a^7*d^13*g^2*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^6
+ 120*(b*x*e + a*e)^3*B*b^10*c^7*d^3*g^2*i*e^4*log((b*x*e + a*e)/(d*x + c))
/(d*x + c)^3 - 840*(b*x*e + a*e)^3*B*a*b^9*c^6*d^4*g^2*i*e^4*log((b*x*e + a
*e)/(d*x + c))/(d*x + c)^3 + 2520*(b*x*e + a*e)^3*B*a^2*b^8*c^5*d^5*g^2*i*e
^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 4200*(b*x*e + a*e)^3*B*a^3*b^
7*c^4*d^6*g^2*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 4200*(b*x*e
+ a*e)^3*B*a^4*b^6*c^3*d^7*g^2*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)
^3 - 2520*(b*x*e + a*e)^3*B*a^5*b^5*c^2*d^8*g^2*i*e^4*log((b*x*e + a*e)/(d*
x + c))/(d*x + c)^3 + 840*(b*x*e + a*e)^3*B*a^6*b^4*c*d^9*g^2*i*e^4*log((b*
x*e + a*e)/(d*x + c))/(d*x + c)^3 - 120*(b*x*e + a*e)^3*B*a^7*b^3*d^10*g^2*
i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 90*(b*x*e + a*e)^4*B*b^9*c
^7*d^4*g^2*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 630*(b*x*e + a*
e)^4*B*a*b^8*c^6*d^5*g^2*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 1
890*(b*x*e + a*e)^4*B*a^2*b^7*c^5*d^6*g^2*i*e^3*log((b*x*e + a*e)/(d*x + c)
)/(d*x + c)^4 + 3150*(b*x*e + a*e)^4*B*a^3*b^6*c^4*d^7*g^2*i*e^3*log((b*x*e
 + a*e)/(d*x + c))/(d*x + c)^4 - 3150*(b*x*e + a*e)^4*B*a^4*b^5*c^3*d^8*g^2
*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 1890*(b*x*e + a*e)^4*B*a^
5*b^4*c^2*d^9*g^2*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 630*(b*x
*e + a*e)^4*B*a^6*b^3*c*d^10*g^2*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x +
c)^4 + 90*(b*x*e + a*e)^4*B*a^7*b^2*d^11*g^2*i*e^3*log((b*x*e + a*e)/(d*x +
 c))/(d*x + c)^4 + 36*(b*x*e + a*e)^5*B*b^8*c^7*d^5*g^2*i*e^2*log((b*x*e +
a*e)/(d*x + c))/(d*x + c)^5 - 252*(b*x*e + a*e)^5*B*a*b^7*c^6*d^6*g^2*i*e^2
*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 756*(b*x*e + a*e)^5*B*a^2*b^6*c
^5*d^7*g^2*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 1260*(b*x*e + a
*e)^5*B*a^3*b^5*c^4*d^8*g^2*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5
+ 1260*(b*x*e + a*e)^5*B*a^4*b^4*c^3*d^9*g^2*i*e^2*log((b*x*e + a*e)/(d*x +
```

```
c))/(d*x + c)^5 - 756*(b*x*e + a*e)^5*B*a^5*b^3*c^2*d^10*g^2*i*e^2*log((b*
x*e + a*e)/(d*x + c))/(d*x + c)^5 + 252*(b*x*e + a*e)^5*B*a^6*b^2*c*d^11*g^
2*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 36*(b*x*e + a*e)^5*B*a^7
*b*d^12*g^2*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 6*(b*x*e + a*e
)^6*B*b^7*c^7*d^6*g^2*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 42*(b*
x*e + a*e)^6*B*a*b^6*c^6*d^7*g^2*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)
^6 - 126*(b*x*e + a*e)^6*B*a^2*b^5*c^5*d^8*g^2*i*e*log((b*x*e + a*e)/(d*x +
 c))/(d*x + c)^6 + 210*(b*x*e + a*e)^6*B*a^3*b^4*c^4*d^9*g^2*i*e*log((b*x*e
 + a*e)/(d*x + c))/(d*x + c)^6 - 210*(b*x*e + a*e)^6*B*a^4*b^3*c^3*d^10*g^2
*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 126*(b*x*e + a*e)^6*B*a^5*b
^2*c^2*d^11*g^2*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 - 42*(b*x*e +
a*e)^6*B*a^6*b*c*d^12*g^2*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6 + 6*
(b*x*e + a*e)^6*B*a^7*d^13*g^2*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^6
 + 6*A*b^13*c^7*g^2*i*e^7 - 2*B*b^13*c^7*g^2*i*e^7 - 42*A*a*b^12*c^6*d*g^2*
i*e^7 + 14*B*a*b^12*c^6*d*g^2*i*e^7 + 126*A*a^2*b^11*c^5*d^2*g^2*i*e^7 - 42
*B*a^2*b^11*c^5*d^2*g^2*i*e^7 - 210*A*a^3*b^10*c^4*d^3*g^2*i*e^7 + 70*B*a^3
*b^10*c^4*d^3*g^2*i*e^7 + 210*A*a^4*b^9*c^3*d^4*g^2*i*e^7 - 70*B*a^4*b^9*c^
3*d^4*g^2*i*e^7 - 126*A*a^5*b^8*c^2*d^5*g^2*i*e^7 + 42*B*a^5*b^8*c^2*d^5*g^
2*i*e^7 + 42*A*a^6*b^7*c*d^6*g^2*i*e^7 - 14*B*a^6*b^7*c*d^6*g^2*i*e^7 - 6*A
*a^7*b^6*d^7*g^2*i*e^7 + 2*B*a^7*b^6*d^7*g^2*i*e^7 - 36*(b*x*e + a*e)*A*b^1
2*c^7*d*g^2*i*e^6/(d*x + c) + 18*(b*x*e + a*e)*B*b^12*c^7*d*g^2*i*e^6/(d*x
+ c) + 252*(b*x*e + a*e)*A*a*b^11*c^6*d^2*g^2*i*e^6/(d*x + c) - 126*(b*x*e
+ a*e)*B*a*b^11*c^6*d^2*g^2*i*e^6/(d*x + c) - 756*(b*x*e + a*e)*A*a^2*b^10*
c^5*d^3*g^2*i*e^6/(d*x + c) + 378*(b*x*e + a*e)*B*a^2*b^10*c^5*d^3*g^2*i*e^
6/(d*x + c) + 1260*(b*x*e + a*e)*A*a^3*b^9*c^4*d^4*g^2*i*e^6/(d*x + c) - 63
0*(b*x*e + a*e)*B*a^3*b^9*c^4*d^4*g^2*i*e^6/(d*x + c) - 1260*(b*x*e + a*e)*
A*a^4*b^8*c^3*d^5*g^2*i*e^6/(d*x + c) + 630*(b*x*e + a*e)*B*a^4*b^8*c^3*d^5
*g^2*i*e^6/(d*x + c) + 756*(b*x*e + a*e)*A*a^5*b^7*c^2*d^6*g^2*i*e^6/(d*x +
 c) - 378*(b*x*e + a*e)*B*a^5*b^7*c^2*d^6*g^2*i*e^6/(d*x + c) - 252*(b*x*e
+ a*e)*A*a^6*b^6*c*d^7*g^2*i*e^6/(d*x + c) + 126*(b*x*e + a*e)*B*a^6*b^6*c*
d^7*g^2*i*e^6/(d*x + c) + 36*(b*x*e + a*e)*A*a^7*b^5*d^8*g^2*i*e^6/(d*x + c
) - 18*(b*x*e + a*e)*B*a^7*b^5*d^8*g^2*i*e^6/(d*x + c) + 90*(b*x*e + a*e)^2
*A*b^11*c^7*d^2*g^2*i*e^5/(d*x + c)^2 - 63*(b*x*e + a*e)^2*B*b^11*c^7*d^2*g
^2*i*e^5/(d*x + c)^2 - 630*(b*x*e + a*e)^2*A*a*b^10*c^6*d^3*g^2*i*e^5/(d*x
+ c)^2 + 441*(b*x*e + a*e)^2*B*a*b^10*c^6*d^3*g^2*i*e^5/(d*x + c)^2 + 1890*
(b*x*e + a*e)^2*A*a^2*b^9*c^5*d^4*g^2*i*e^5/(d*x + c)^2 - 1323*(b*x*e + a*e
)^2*B*a^2*b^9*c^5*d^4*g^2*i*e^5/(d*x + c)^2 - 3150*(b*x*e + a*e)^2*A*a^3*b^
8*c^4*d^5*g^2*i*e^5/(d*x + c)^2 + 2205*(b*x*e + a*e)^2*B*a^3*b^8*c^4*d^5*g^
2*i*e^5/(d*x + c)^2 + 3150*(b*x*e + a*e)^2*A*a^4*b^7*c^3*d^6*g^2*i*e^5/(d*x
 + c)^2 - 2205*(b*x*e + a*e)^2*B*a^4*b^7*c^3*d^6*g^2*i*e^5/(d*x + c)^2 - 18
90*(b*x*e + a*e)^2*A*a^5*b^6*c^2*d^7*g^2*i*e^5/(d*x + c)^2 + 1323*(b*x*e +
a*e)^2*B*a^5*b^6*c^2*d^7*g^2*i*e^5/(d*x + c)^2 + 630*(b*x*e + a*e)^2*A*a^6*
b^5*c*d^8*g^2*i*e^5/(d*x + c)^2 - 441*(b*x*e + a*e)^2*B*a^6*b^5*c*d^8*g^2*i
*e^5/(d*x + c)^2 - 90*(b*x*e + a*e)^2*A*a^7*b^4*d^9*g^2*i*e^5/(d*x + c)^2 +
 63*(b*x*e + a*e)^2*B*a^7*b^4*d^9*g^2*i*e^5/(d*x + c)^2 + 74*(b*x*e + a*e)^
3*B*b^10*c^7*d^3*g^2*i*e^4/(d*x + c)^3 - 518*(b*x*e + a*e)^3*B*a*b^9*c^6*d^
4*g^2*i*e^4/(d*x + c)^3 + 1554*(b*x*e + a*e)^3*B*a^2*b^8*c^5*d^5*g^2*i*e^4/
(d*x + c)^3 - 2590*(b*x*e + a*e)^3*B*a^3*b^7*c^4*d^6*g^2*i*e^4/(d*x + c)^3
+ 2590*(b*x*e + a*e)^3*B*a^4*b^6*c^3*d^7*g^2*i*e^4/(d*x + c)^3 - 1554*(b*x*
e + a*e)^3*B*a^5*b^5*c^2*d^8*g^2*i*e^4/(d*x + c)^3 + 518*(b*x*e + a*e)^3*B*
a^6*b^4*c*d^9*g^2*i*e^4/(d*x + c)^3 - 74*(b*x*e + a*e)^3*B*a^7*b^3*d^10*g^2
*i*e^4/(d*x + c)^3 - 33*(b*x*e + a*e)^4*B*b^9*c^7*d^4*g^2*i*e^3/(d*x + c)^4
 + 231*(b*x*e + a*e)^4*B*a*b^8*c^6*d^5*g^2*i*e^3/(d*x + c)^4 - 693*(b*x*e +
 a*e)^4*B*a^2*b^7*c^5*d^6*g^2*i*e^3/(d*x + c)^4 + 1155*(b*x*e + a*e)^4*B*a^
3*b^6*c^4*d^7*g^2*i*e^3/(d*x + c)^4 - 1155*(b*x*e + a*e)^4*B*a^4*b^5*c^3*d^
8*g^2*i*e^3/(d*x + c)^4 + 693*(b*x*e + a*e)^4*B*a^5*b^4*c^2*d^9*g^2*i*e^3/(
d*x + c)^4 - 231*(b*x*e + a*e)^4*B*a^6*b^3*c*d^10*g^2*i*e^3/(d*x + c)^4 + 3
3*(b*x*e + a*e)^4*B*a^7*b^2*d^11*g^2*i*e^3/(d*x + c)^4 + 6*(b*x*e + a*e)^5*
B*b^8*c^7*d^5*g^2*i*e^2/(d*x + c)^5 - 42*(b*x*e + a*e)^5*B*a*b^7*c^6*d^6*g^
```

```
2*i*e^2/(d*x + c)^5 + 126*(b*x*e + a*e)^5*B*a^2*b^6*c^5*d^7*g^2*i*e^2/(d*x
+ c)^5 - 210*(b*x*e + a*e)^5*B*a^3*b^5*c^4*d^8*g^2*i*e^2/(d*x + c)^5 + 210*
(b*x*e + a*e)^5*B*a^4*b^4*c^3*d^9*g^2*i*e^2/(d*x + c)^5 - 126*(b*x*e + a*e)
^5*B*a^5*b^3*c^2*d^10*g^2*i*e^2/(d*x + c)^5 + 42*(b*x*e + a*e)^5*B*a^6*b^2*
c*d^11*g^2*i*e^2/(d*x + c)^5 - 6*(b*x*e + a*e)^5*B*a^7*b*d^12*g^2*i*e^2/(d*
x + c)^5)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c -
a*d)))/(b^10*d^3*e^6 - 6*(b*x*e + a*e)*b^9*d^4*e^5/(d*x + c) + 15*(b*x*e +
a*e)^2*b^8*d^5*e^4/(d*x + c)^2 - 20*(b*x*e + a*e)^3*b^7*d^6*e^3/(d*x + c)^3
 + 15*(b*x*e + a*e)^4*b^6*d^7*e^2/(d*x + c)^4 - 6*(b*x*e + a*e)^5*b^5*d^8*e
/(d*x + c)^5 + (b*x*e + a*e)^6*b^4*d^9/(d*x + c)^6)
```

maple [B] time = 0.18, size = 7597, normalized size = 20.48

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

```
[Out] result too large to display
```

maxima [B] time = 1.51, size = 1789, normalized size = 4.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algor
ithm="maxima")
```

```
[Out] 1/6*A*b^2*d^3*g^2*i^3*x^6 + 3/5*A*b^2*c*d^2*g^2*i^3*x^5 + 2/5*A*a*b*d^3*g^2
*i^3*x^5 + 3/4*A*b^2*c^2*d*g^2*i^3*x^4 + 3/2*A*a*b*c*d^2*g^2*i^3*x^4 + 1/4*
A*a^2*d^3*g^2*i^3*x^4 + 1/3*A*b^2*c^3*g^2*i^3*x^3 + 2*A*a*b*c^2*d*g^2*i^3*x
^3 + A*a^2*c*d^2*g^2*i^3*x^3 + A*a*b*c^3*g^2*i^3*x^2 + 3/2*A*a^2*c^2*d*g^2*
i^3*x^2 + (x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*lo
g(d*x + c)/d)*B*a^2*c^3*g^2*i^3 + (x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c))
 - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*a*b
*c^3*g^2*i^3 + 1/6*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(
b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c
^2 - a^2*d^2)*x)/(b^2*d^2))*B*b^2*c^3*g^2*i^3 + 3/2*(x^2*log(b*e*x/(d*x + c
) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a
*d)*x/(b*d))*B*a^2*c^2*d*g^2*i^3 + (2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x +
c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2
)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a*b*c^2*d*g^2*i^3 + 1/8*(6*x^
4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log
(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*
x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*b^2*c^2*d*g^2*i^3 + 1/2*(2*x^3*
log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d
*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)
)*B*a^2*c*d^2*g^2*i^3 + 1/4*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6
*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)
*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*
B*a*b*c*d^2*g^2*i^3 + 1/20*(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 1
2*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^
4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2
- 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*B*b^2*c*d^2*g^2*i^3 + 1/24*(6*x^4*lo
g(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x
 + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2
+ 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a^2*d^3*g^2*i^3 + 1/30*(12*x^5*log(
b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x
 + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*
x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*
```

```
B*a*b*d^3*g^2*i^3 + 1/360*(60*x^6*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 60
*a^6*log(b*x + a)/b^6 + 60*c^6*log(d*x + c)/d^6 - (12*(b^5*c*d^4 - a*b^4*d^
5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5
)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5
))*B*b^2*d^3*g^2*i^3 + A*a^2*c^3*g^2*i^3*x
```

mupad [B] time = 6.04, size = 2465, normalized size = 6.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] x^3*((g^2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3 - 3*B*b^3*c^3 + 72*A*
a*b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d + 5*B*a^2*b*c*d^2))/(12*b)
 + ((60*a*d + 60*b*c)*((((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*
c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d)
 - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60
*A*a*b*c*d + B*a*b*c*d))/5 + A*a*b*c*d^2*g^2*i^3))/(180*b*d) - (a*c*((b*d^2
*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*
d + 60*b*c))/60))/(3*b*d)) - x^4*((((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B
*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c
))/(240*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*
b^2*c^2 + 60*A*a*b*c*d + B*a*b*c*d))/20 + (A*a*b*c*d^2*g^2*i^3)/4) + x^2*((
a*c*((((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g
^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^2*i^3*(15*
A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60*A*a*b*c*d + B*a*b
*c*d))/5 + A*a*b*c*d^2*g^2*i^3))/(2*b*d) - ((60*a*d + 60*b*c)*((g^2*i^3*(4*
A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3 - 3*B*b^3*c^3 + 72*A*a*b^2*c^2*d + 48*
A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d + 5*B*a^2*b*c*d^2))/(4*b) + ((60*a*d + 60*b
*c)*((((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g
^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^2*i^3*(15*
A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60*A*a*b*c*d + B*a*b
*c*d))/5 + A*a*b*c*d^2*g^2*i^3))/(60*b*d) - (a*c*((b*d^2*g^2*i^3*(18*A*a*d
 + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60))/(
b*d)))/(120*b*d) + (c*g^2*i^3*(12*A*a^3*d^3 + 3*A*b^3*c^3 + 3*B*a^3*d^3 - B
*b^3*c^3 + 36*A*a*b^2*c^2*d + 54*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d + 3*B*a^2*
b*c*d^2))/(6*b*d)) + log((e*(a + b*x))/(c + d*x))*(B*a^2*c^3*g^2*i^3*x + (B
*c*g^2*i^3*x^3*(3*a^2*d^2 + b^2*c^2 + 6*a*b*c*d))/3 + (B*d*g^2*i^3*x^4*(a^2
*d^2 + 3*b^2*c^2 + 6*a*b*c*d))/4 + (B*b^2*d^3*g^2*i^3*x^6)/6 + (B*a*c^2*g^2
*i^3*x^2*(3*a*d + 2*b*c))/2 + (B*b*d^2*g^2*i^3*x^5*(2*a*d + 3*b*c))/5) + x^
5*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/30 - (A*b*d^2*g^2*
i^3*(60*a*d + 60*b*c))/300) - x*(((60*a*d + 60*b*c)*((a*c*((((b*d^2*g^2*i^3
*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b
*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*
c^2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60*A*a*b*c*d + B*a*b*c*d))/5 + A*a*b*c*d^
2*g^2*i^3))/(b*d) - ((60*a*d + 60*b*c)*((g^2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^
3 + B*a^3*d^3 - 3*B*b^3*c^3 + 72*A*a*b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b
^2*c^2*d + 5*B*a^2*b*c*d^2))/(4*b) + ((60*a*d + 60*b*c)*((((b*d^2*g^2*i^3*(
18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c
))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^
2 + 2*B*a^2*d^2 - 3*B*b^2*c^2 + 60*A*a*b*c*d + B*a*b*c*d))/5 + A*a*b*c*d^2*
g^2*i^3))/(60*b*d) - (a*c*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*
b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60))/(b*d)))/(60*b*d) + (c*g^
2*i^3*(12*A*a^3*d^3 + 3*A*b^3*c^3 + 3*B*a^3*d^3 - B*b^3*c^3 + 36*A*a*b^2*c^
2*d + 54*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(3*b*d)))/(60*
b*d) + (a*c*((g^2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3 - 3*B*b^3*c^3
 + 72*A*a*b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d + 5*B*a^2*b*c*d^2)
)/(4*b) + ((60*a*d + 60*b*c)*((((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d
 - B*b*c))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(
```

```
60*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2 - 3*B*b^2*c
^2 + 60*A*a*b*c*d + B*a*b*c*d))/5 + A*a*b*c*d^2*g^2*i^3))/(60*b*d) - (a*c*(
(b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d - B*b*c))/6 - (A*b*d^2*g^2*i^3*
(60*a*d + 60*b*c))/60))/(b*d)))/(b*d) - (a*c^2*g^2*i^3*(12*A*a^2*d^2 + 6*A*
b^2*c^2 + 3*B*a^2*d^2 - 2*B*b^2*c^2 + 24*A*a*b*c*d - B*a*b*c*d))/(2*b*d)) -
 (log(c + d*x)*(B*b^2*c^6*g^2*i^3 + 15*B*a^2*c^4*d^2*g^2*i^3 - 6*B*a*b*c^5*
d*g^2*i^3))/(60*d^3) - (log(a + b*x)*(B*a^6*d^3*g^2*i^3 - 20*B*a^3*b^3*c^3*
g^2*i^3 - 6*B*a^5*b*c*d^2*g^2*i^3 + 15*B*a^4*b^2*c^2*d*g^2*i^3))/(60*b^4) +
 (A*b^2*d^3*g^2*i^3*x^6)/6
```

sympy [B] time = 12.21, size = 1727, normalized size = 4.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*b**2*d**3*g**2*i**3*x**6/6 - B*a**3*g**2*i**3*(a**3*d**3 - 6*a**2*b*c*d**
2 + 15*a*b**2*c**2*d - 20*b**3*c**3)*log(x + (B*a**6*c*d**5*g**2*i**3 - 6*B
*a**5*b*c**2*d**4*g**2*i**3 + 15*B*a**4*b**2*c**3*d**3*g**2*i**3 + B*a**4*d
**3*g**2*i**3*(a**3*d**3 - 6*a**2*b*c*d**2 + 15*a*b**2*c**2*d - 20*b**3*c**
3)/b - 35*B*a**3*b**3*c**4*d**2*g**2*i**3 - B*a**3*c*d**2*g**2*i**3*(a**3*d
**3 - 6*a**2*b*c*d**2 + 15*a*b**2*c**2*d - 20*b**3*c**3) + 6*B*a**2*b**4*c*
*5*d*g**2*i**3 - B*a*b**5*c**6*g**2*i**3)/(B*a**6*d**6*g**2*i**3 - 6*B*a**5
*b*c*d**5*g**2*i**3 + 15*B*a**4*b**2*c**2*d**4*g**2*i**3 - 20*B*a**3*b**3*c
**3*d**3*g**2*i**3 - 15*B*a**2*b**4*c**4*d**2*g**2*i**3 + 6*B*a*b**5*c**5*d
*g**2*i**3 - B*b**6*c**6*g**2*i**3))/(60*b**4) - B*c**4*g**2*i**3*(15*a**2*
d**2 - 6*a*b*c*d + b**2*c**2)*log(x + (B*a**6*c*d**5*g**2*i**3 - 6*B*a**5*b
*c**2*d**4*g**2*i**3 + 15*B*a**4*b**2*c**3*d**3*g**2*i**3 - 35*B*a**3*b**3*
c**4*d**2*g**2*i**3 + 6*B*a**2*b**4*c**5*d*g**2*i**3 - B*a*b**5*c**6*g**2*i
**3 + B*a*b**3*c**4*g**2*i**3*(15*a**2*d**2 - 6*a*b*c*d + b**2*c**2) - B*b*
*4*c**5*g**2*i**3*(15*a**2*d**2 - 6*a*b*c*d + b**2*c**2)/d)/(B*a**6*d**6*g*
*2*i**3 - 6*B*a**5*b*c*d**5*g**2*i**3 + 15*B*a**4*b**2*c**2*d**4*g**2*i**3
- 20*B*a**3*b**3*c**3*d**3*g**2*i**3 - 15*B*a**2*b**4*c**4*d**2*g**2*i**3 +
 6*B*a*b**5*c**5*d*g**2*i**3 - B*b**6*c**6*g**2*i**3))/(60*d**3) + x**5*(2*
A*a*b*d**3*g**2*i**3/5 + 3*A*b**2*c*d**2*g**2*i**3/5 + B*a*b*d**3*g**2*i**3
/30 - B*b**2*c*d**2*g**2*i**3/30) + x**4*(A*a**2*d**3*g**2*i**3/4 + 3*A*a*b
*c*d**2*g**2*i**3/2 + 3*A*b**2*c**2*d*g**2*i**3/4 + 7*B*a**2*d**3*g**2*i**3
/120 + B*a*b*c*d**2*g**2*i**3/20 - 13*B*b**2*c**2*d*g**2*i**3/120) + x**3*(
A*a**2*c*d**2*g**2*i**3 + 2*A*a*b*c**2*d*g**2*i**3 + A*b**2*c**3*g**2*i**3/
3 + B*a**3*d**3*g**2*i**3/(180*b) + 13*B*a**2*c*d**2*g**2*i**3/60 - 7*B*a*b
*c**2*d*g**2*i**3/60 - 19*B*b**2*c**3*g**2*i**3/180) + x**2*(3*A*a**2*c**2*
d*g**2*i**3/2 + A*a*b*c**3*g**2*i**3 - B*a**4*d**3*g**2*i**3/(120*b**2) + B
*a**3*c*d**2*g**2*i**3/(20*b) + B*a**2*c**2*d*g**2*i**3/4 - 17*B*a*b*c**3*g
**2*i**3/60 - B*b**2*c**4*g**2*i**3/(120*d)) + x*(A*a**2*c**3*g**2*i**3 + B
*a**5*d**3*g**2*i**3/(60*b**3) - B*a**4*c*d**2*g**2*i**3/(10*b**2) + B*a**3
*c**2*d*g**2*i**3/(4*b) - B*a**2*c**3*g**2*i**3/12 - B*a*b*c**4*g**2*i**3/(
10*d) + B*b**2*c**5*g**2*i**3/(60*d**2)) + (B*a**2*c**3*g**2*i**3*x + 3*B*a
**2*c**2*d*g**2*i**3*x**2/2 + B*a**2*c*d**2*g**2*i**3*x**3 + B*a**2*d**3*g*
*2*i**3*x**4/4 + B*a*b*c**3*g**2*i**3*x**2 + 2*B*a*b*c**2*d*g**2*i**3*x**3
+ 3*B*a*b*c*d**2*g**2*i**3*x**4/2 + 2*B*a*b*d**3*g**2*i**3*x**5/5 + B*b**2*
c**3*g**2*i**3*x**3/3 + 3*B*b**2*c**2*d*g**2*i**3*x**4/4 + 3*B*b**2*c*d**2*
g**2*i**3*x**5/5 + B*b**2*d**3*g**2*i**3*x**6/6)*log(e*(a + b*x)/(c + d*x))
```

3.22 $\int (ag+bgx)(ci+dix)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right) dx$

Optimal. Leaf size=271

$$-\frac{gi^3(c+dx)^4(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4d^2}+\frac{bgi^3(c+dx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5d^2}+\frac{Bgi^3(bc-ad)^5\log\left(\frac{a+bx}{c+dx}\right)}{20b^4d^2}+$$

```
[Out] 1/20*B*(-a*d+b*c)^4*g*i^3*x/b^3/d+1/40*B*(-a*d+b*c)^3*g*i^3*(d*x+c)^2/b^2/d
^2+1/60*B*(-a*d+b*c)^2*g*i^3*(d*x+c)^3/b/d^2-1/20*B*(-a*d+b*c)*g*i^3*(d*x+c
)^4/d^2+1/20*B*(-a*d+b*c)^5*g*i^3*ln((b*x+a)/(d*x+c))/b^4/d^2-1/4*(-a*d+b*c
)*g*i^3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^2+1/5*b*g*i^3*(d*x+c)^5*(A+
B*ln(e*(b*x+a)/(d*x+c)))/d^2+1/20*B*(-a*d+b*c)^5*g*i^3*ln(d*x+c)/b^4/d^2
```

Rubi [A] time = 0.34, antiderivative size = 232, normalized size of antiderivative = 0.86, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2528, 2525, 12, 43}

$$-\frac{gi^3(c+dx)^4(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4d^2}+\frac{bgi^3(c+dx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5d^2}+\frac{Bgi^3(c+dx)^2(bc-ad)^3}{40b^2d^2}+\frac{B}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] (B*(b*c - a*d)^4*g*i^3*x)/(20*b^3*d) + (B*(b*c - a*d)^3*g*i^3*(c + d*x)^2)/
(40*b^2*d^2) + (B*(b*c - a*d)^2*g*i^3*(c + d*x)^3)/(60*b*d^2) - (B*(b*c - a
*d)*g*i^3*(c + d*x)^4)/(20*d^2) + (B*(b*c - a*d)^5*g*i^3*Log[a + b*x])/(20*
b^4*d^2) - ((b*c - a*d)*g*i^3*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x
)]))/(4*d^2) + (b*g*i^3*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(
5*d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (22c+22dx)^3(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx = \int \left(\frac{(-bc+ad)g(22c+22dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d} + \right.$$

$$= \frac{(bg)\int (22c+22dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{22d} + \frac{((-bc}{}$$

$$= -\frac{2662(bc-ad)g(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^2} + \frac{1064}{}$$

$$= -\frac{2662(bc-ad)g(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^2} + \frac{1064}{}$$

$$= -\frac{2662(bc-ad)g(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{d^2} + \frac{1064}{}$$

$$= \frac{2662B(bc-ad)^4gx}{5b^3d} + \frac{1331B(bc-ad)^3g(c+dx)^2}{5b^2d^2} + \frac{26}{}$$

Mathematica [A] time = 0.20, size = 261, normalized size = 0.96

$$\frac{gi^3\left(24b(c+dx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-30(c+dx)^4(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+\frac{5B(bc-ad)^2\left(3b^2(c+dx)^2(bc-ad)+6bc\right.}{}\right.}{1}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]
),x]
```

```
[Out] (g*i^3*((5*B*(b*c - a*d)^2*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c +
d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]))/b^4 - (2*B*(b*c
 - a*d)*(12*b*d*(b*c - a*d)^3*x + 6*b^2*(b*c - a*d)^2*(c + d*x)^2 + 4*b^3*(
b*c - a*d)*(c + d*x)^3 + 3*b^4*(c + d*x)^4 + 12*(b*c - a*d)^4*Log[a + b*x])
)/b^4 - 30*(b*c - a*d)*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2
4*b*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(120*d^2)
```

fricas [A] time = 0.96, size = 502, normalized size = 1.85

$$\frac{24\,Ab^5d^5gi^3x^5+6\left((15\,A-B)b^5cd^4+(5\,A+B)ab^4d^5\right)gi^3x^4+2\left((60\,A-11\,B)b^5c^2d^3+10\,(6\,A+B)ab^4cd^4+Ba^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="fricas")
```

```
[Out] 1/120*(24*A*b^5*d^5*g*i^3*x^5 + 6*((15*A - B)*b^5*c*d^4 + (5*A + B)*a*b^4*d
^5)*g*i^3*x^4 + 2*((60*A - 11*B)*b^5*c^2*d^3 + 10*(6*A + B)*a*b^4*c*d^4 + B
*a^2*b^3*d^5)*g*i^3*x^3 + 3*((20*A - 9*B)*b^5*c^3*d^2 + 5*(12*A + B)*a*b^4*
c^2*d^3 + 5*B*a^2*b^3*c*d^4 - B*a^3*b^2*d^5)*g*i^3*x^2 - 6*(B*b^5*c^4*d - 5
*(4*A - B)*a*b^4*c^3*d^2 - 10*B*a^2*b^3*c^2*d^3 + 5*B*a^3*b^2*c*d^4 - B*a^4
*b*d^5)*g*i^3*x + 6*(10*B*a^2*b^3*c^3*d^2 - 10*B*a^3*b^2*c^2*d^3 + 5*B*a^4*
b*c*d^4 - B*a^5*d^5)*g*i^3*log(b*x + a) + 6*(B*b^5*c^5 - 5*B*a*b^4*c^4*d)*g
*i^3*log(d*x + c) + 6*(4*B*b^5*d^5*g*i^3*x^5 + 20*B*a*b^4*c^3*d^2*g*i^3*x +
 5*(3*B*b^5*c*d^4 + B*a*b^4*d^5)*g*i^3*x^4 + 20*(B*b^5*c^2*d^3 + B*a*b^4*c*
```

```
d^4)*g*i^3*x^3 + 10*(B*b^5*c^3*d^2 + 3*B*a*b^4*c^2*d^3)*g*i^3*x^2)*log((b*e
*x + a*e)/(d*x + c)))/(b^4*d^2)
```

giac [B] time = 1.44, size = 5710, normalized size = 21.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="giac")
```

```
[Out] 1/120*(6*B*b^11*c^6*g*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 36*B*a*
b^10*c^5*d*g*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 90*B*a^2*b^9*c^4
*d^2*g*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 120*B*a^3*b^8*c^3*d^3*
g*i*e^6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 90*B*a^4*b^7*c^2*d^4*g*i*e^
6*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 36*B*a^5*b^6*c*d^5*g*i*e^6*log(-b
*e + (b*x*e + a*e)*d/(d*x + c)) + 6*B*a^6*b^5*d^6*g*i*e^6*log(-b*e + (b*x*e
 + a*e)*d/(d*x + c)) - 30*(b*x*e + a*e)*B*b^10*c^6*d*g*i*e^5*log(-b*e + (b*
x*e + a*e)*d/(d*x + c))/(d*x + c) + 180*(b*x*e + a*e)*B*a*b^9*c^5*d^2*g*i*e
^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 450*(b*x*e + a*e)*B*a^
2*b^8*c^4*d^3*g*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 600
*(b*x*e + a*e)*B*a^3*b^7*c^3*d^4*g*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x +
c))/(d*x + c) - 450*(b*x*e + a*e)*B*a^4*b^6*c^2*d^5*g*i*e^5*log(-b*e + (b*x
*e + a*e)*d/(d*x + c))/(d*x + c) + 180*(b*x*e + a*e)*B*a^5*b^5*c*d^6*g*i*e^
5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 30*(b*x*e + a*e)*B*a^6*
b^4*d^7*g*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 60*(b*x*e
 + a*e)^2*B*b^9*c^6*d^2*g*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x
+ c)^2 - 360*(b*x*e + a*e)^2*B*a*b^8*c^5*d^3*g*i*e^4*log(-b*e + (b*x*e + a*
e)*d/(d*x + c))/(d*x + c)^2 + 900*(b*x*e + a*e)^2*B*a^2*b^7*c^4*d^4*g*i*e^4
*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 1200*(b*x*e + a*e)^2*B
*a^3*b^6*c^3*d^5*g*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2
+ 900*(b*x*e + a*e)^2*B*a^4*b^5*c^2*d^6*g*i*e^4*log(-b*e + (b*x*e + a*e)*d/
(d*x + c))/(d*x + c)^2 - 360*(b*x*e + a*e)^2*B*a^5*b^4*c*d^7*g*i*e^4*log(-b
*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 60*(b*x*e + a*e)^2*B*a^6*b^3*
d^8*g*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 60*(b*x*e +
 a*e)^3*B*b^8*c^6*d^3*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x +
c)^3 + 360*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g*i*e^3*log(-b*e + (b*x*e + a*e)
*d/(d*x + c))/(d*x + c)^3 - 900*(b*x*e + a*e)^3*B*a^2*b^6*c^4*d^5*g*i*e^3*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 1200*(b*x*e + a*e)^3*B*a
^3*b^5*c^3*d^6*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 -
900*(b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d
*x + c))/(d*x + c)^3 + 360*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g*i*e^3*log(-b*e
 + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 60*(b*x*e + a*e)^3*B*a^6*b^2*d^
9*g*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 30*(b*x*e + a
*e)^4*B*b^7*c^6*d^4*g*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)
^4 - 180*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5*g*i*e^2*log(-b*e + (b*x*e + a*e)*d
/(d*x + c))/(d*x + c)^4 + 450*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g*i*e^2*log
(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 600*(b*x*e + a*e)^4*B*a^3*
b^4*c^3*d^7*g*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 450
*(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x
+ c))/(d*x + c)^4 - 180*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*g*i*e^2*log(-b*e +
(b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 30*(b*x*e + a*e)^4*B*a^6*b*d^10*g*
i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 6*(b*x*e + a*e)^5
*B*b^6*c^6*d^5*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 + 36
*(b*x*e + a*e)^5*B*a*b^5*c^5*d^6*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c)
)/(d*x + c)^5 - 90*(b*x*e + a*e)^5*B*a^2*b^4*c^4*d^7*g*i*e*log(-b*e + (b*x*
e + a*e)*d/(d*x + c))/(d*x + c)^5 + 120*(b*x*e + a*e)^5*B*a^3*b^3*c^3*d^8*g
*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5 - 90*(b*x*e + a*e)^5
*B*a^4*b^2*c^2*d^9*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^5
+ 36*(b*x*e + a*e)^5*B*a^5*b*c*d^10*g*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x +
```

```
c))/(d*x + c)^5 - 6*(b*x*e + a*e)^5*B*a^6*d^11*g*i*e*log(-b*e + (b*x*e + a
*e)*d/(d*x + c))/(d*x + c)^5 - 60*(b*x*e + a*e)^2*B*b^9*c^6*d^2*g*i*e^4*log
((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 360*(b*x*e + a*e)^2*B*a*b^8*c^5*d^3
*g*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 - 900*(b*x*e + a*e)^2*B*a
^2*b^7*c^4*d^4*g*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 1200*(b*x
*e + a*e)^2*B*a^3*b^6*c^3*d^5*g*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c
)^2 - 900*(b*x*e + a*e)^2*B*a^4*b^5*c^2*d^6*g*i*e^4*log((b*x*e + a*e)/(d*x
+ c))/(d*x + c)^2 + 360*(b*x*e + a*e)^2*B*a^5*b^4*c*d^7*g*i*e^4*log((b*x*e
+ a*e)/(d*x + c))/(d*x + c)^2 - 60*(b*x*e + a*e)^2*B*a^6*b^3*d^8*g*i*e^4*lo
g((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 60*(b*x*e + a*e)^3*B*b^8*c^6*d^3*g
*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 360*(b*x*e + a*e)^3*B*a*b
^7*c^5*d^4*g*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 900*(b*x*e +
a*e)^3*B*a^2*b^6*c^4*d^5*g*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 -
 1200*(b*x*e + a*e)^3*B*a^3*b^5*c^3*d^6*g*i*e^3*log((b*x*e + a*e)/(d*x + c)
)/(d*x + c)^3 + 900*(b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7*g*i*e^3*log((b*x*e +
a*e)/(d*x + c))/(d*x + c)^3 - 360*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g*i*e^3*l
og((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 60*(b*x*e + a*e)^3*B*a^6*b^2*d^9*
g*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 30*(b*x*e + a*e)^4*B*b^7
*c^6*d^4*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 180*(b*x*e + a*
e)^4*B*a*b^6*c^5*d^5*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 450
*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*
x + c)^4 + 600*(b*x*e + a*e)^4*B*a^3*b^4*c^3*d^7*g*i*e^2*log((b*x*e + a*e)/
(d*x + c))/(d*x + c)^4 - 450*(b*x*e + a*e)^4*B*a^4*b^3*c^2*d^8*g*i*e^2*log(
(b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 180*(b*x*e + a*e)^4*B*a^5*b^2*c*d^9*
g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 30*(b*x*e + a*e)^4*B*a^6
*b*d^10*g*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 6*(b*x*e + a*e)^
5*B*b^6*c^6*d^5*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 - 36*(b*x*e
+ a*e)^5*B*a*b^5*c^5*d^6*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 9
0*(b*x*e + a*e)^5*B*a^2*b^4*c^4*d^7*g*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x
 + c)^5 - 120*(b*x*e + a*e)^5*B*a^3*b^3*c^3*d^8*g*i*e*log((b*x*e + a*e)/(d*
x + c))/(d*x + c)^5 + 90*(b*x*e + a*e)^5*B*a^4*b^2*c^2*d^9*g*i*e*log((b*x*e
 + a*e)/(d*x + c))/(d*x + c)^5 - 36*(b*x*e + a*e)^5*B*a^5*b*c*d^10*g*i*e*lo
g((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 6*(b*x*e + a*e)^5*B*a^6*d^11*g*i*e
*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^5 + 6*A*b^11*c^6*g*i*e^6 - 5*B*b^11
*c^6*g*i*e^6 - 36*A*a*b^10*c^5*d*g*i*e^6 + 30*B*a*b^10*c^5*d*g*i*e^6 + 90*A
*a^2*b^9*c^4*d^2*g*i*e^6 - 75*B*a^2*b^9*c^4*d^2*g*i*e^6 - 120*A*a^3*b^8*c^3
*d^3*g*i*e^6 + 100*B*a^3*b^8*c^3*d^3*g*i*e^6 + 90*A*a^4*b^7*c^2*d^4*g*i*e^6
 - 75*B*a^4*b^7*c^2*d^4*g*i*e^6 - 36*A*a^5*b^6*c*d^5*g*i*e^6 + 30*B*a^5*b^6
*c*d^5*g*i*e^6 + 6*A*a^6*b^5*d^6*g*i*e^6 - 5*B*a^6*b^5*d^6*g*i*e^6 - 30*(b*
x*e + a*e)*A*b^10*c^6*d*g*i*e^5/(d*x + c) + 31*(b*x*e + a*e)*B*b^10*c^6*d*g
*i*e^5/(d*x + c) + 180*(b*x*e + a*e)*A*a*b^9*c^5*d^2*g*i*e^5/(d*x + c) - 18
6*(b*x*e + a*e)*B*a*b^9*c^5*d^2*g*i*e^5/(d*x + c) - 450*(b*x*e + a*e)*A*a^2
*b^8*c^4*d^3*g*i*e^5/(d*x + c) + 465*(b*x*e + a*e)*B*a^2*b^8*c^4*d^3*g*i*e^
5/(d*x + c) + 600*(b*x*e + a*e)*A*a^3*b^7*c^3*d^4*g*i*e^5/(d*x + c) - 620*(
b*x*e + a*e)*B*a^3*b^7*c^3*d^4*g*i*e^5/(d*x + c) - 450*(b*x*e + a*e)*A*a^4*
b^6*c^2*d^5*g*i*e^5/(d*x + c) + 465*(b*x*e + a*e)*B*a^4*b^6*c^2*d^5*g*i*e^5
/(d*x + c) + 180*(b*x*e + a*e)*A*a^5*b^5*c*d^6*g*i*e^5/(d*x + c) - 186*(b*x
*e + a*e)*B*a^5*b^5*c*d^6*g*i*e^5/(d*x + c) - 30*(b*x*e + a*e)*A*a^6*b^4*d^
7*g*i*e^5/(d*x + c) + 31*(b*x*e + a*e)*B*a^6*b^4*d^7*g*i*e^5/(d*x + c) - 47
*(b*x*e + a*e)^2*B*b^9*c^6*d^2*g*i*e^4/(d*x + c)^2 + 282*(b*x*e + a*e)^2*B*
a*b^8*c^5*d^3*g*i*e^4/(d*x + c)^2 - 705*(b*x*e + a*e)^2*B*a^2*b^7*c^4*d^4*g
*i*e^4/(d*x + c)^2 + 940*(b*x*e + a*e)^2*B*a^3*b^6*c^3*d^5*g*i*e^4/(d*x + c
)^2 - 705*(b*x*e + a*e)^2*B*a^4*b^5*c^2*d^6*g*i*e^4/(d*x + c)^2 + 282*(b*x*
e + a*e)^2*B*a^5*b^4*c*d^7*g*i*e^4/(d*x + c)^2 - 47*(b*x*e + a*e)^2*B*a^6*b
^3*d^8*g*i*e^4/(d*x + c)^2 + 27*(b*x*e + a*e)^3*B*b^8*c^6*d^3*g*i*e^3/(d*x
+ c)^3 - 162*(b*x*e + a*e)^3*B*a*b^7*c^5*d^4*g*i*e^3/(d*x + c)^3 + 405*(b*x
*e + a*e)^3*B*a^2*b^6*c^4*d^5*g*i*e^3/(d*x + c)^3 - 540*(b*x*e + a*e)^3*B*a
^3*b^5*c^3*d^6*g*i*e^3/(d*x + c)^3 + 405*(b*x*e + a*e)^3*B*a^4*b^4*c^2*d^7*
g*i*e^3/(d*x + c)^3 - 162*(b*x*e + a*e)^3*B*a^5*b^3*c*d^8*g*i*e^3/(d*x + c)
```

```
^3 + 27*(b*x*e + a*e)^3*B*a^6*b^2*d^9*g*i*e^3/(d*x + c)^3 - 6*(b*x*e + a*e)
^4*B*b^7*c^6*d^4*g*i*e^2/(d*x + c)^4 + 36*(b*x*e + a*e)^4*B*a*b^6*c^5*d^5*g
*i*e^2/(d*x + c)^4 - 90*(b*x*e + a*e)^4*B*a^2*b^5*c^4*d^6*g*i*e^2/(d*x + c)
^4 + 120*(b*x*e + a*e)^4*B*a^3*b^4*c^3*d^7*g*i*e^2/(d*x + c)^4 - 90*(b*x*e
+ a*e)^4*B*a^4*b^3*c^2*d^8*g*i*e^2/(d*x + c)^4 + 36*(b*x*e + a*e)^4*B*a^5*b
^2*c*d^9*g*i*e^2/(d*x + c)^4 - 6*(b*x*e + a*e)^4*B*a^6*b*d^10*g*i*e^2/(d*x
+ c)^4)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*
d)))/(b^9*d^2*e^5 - 5*(b*x*e + a*e)*b^8*d^3*e^4/(d*x + c) + 10*(b*x*e + a*e
)^2*b^7*d^4*e^3/(d*x + c)^2 - 10*(b*x*e + a*e)^3*b^6*d^5*e^2/(d*x + c)^3 +
5*(b*x*e + a*e)^4*b^5*d^6*e/(d*x + c)^4 - (b*x*e + a*e)^5*b^4*d^7/(d*x + c)
^5)
```

maple [B] time = 0.16, size = 4481, normalized size = 16.54

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

```
[Out] 9*e^5*B*g*i^3*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)^5*a^2*c^8/(d*x+c)^5+9*e^4*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/
(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^7/(d*x+c)^4*a^2*b^3+1/d*e^5*B*g*i^3*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a*c^4*b^
5-1/2*e*B*g*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2*c^3-d^2*e^5*B*g*i^3*b
^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^4*
c-5/4*d^2*e^4*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)^4*a^4*c+5/2*d*e^4*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^
2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^3*c^2+42*d^4*e^5*B*g*i^3*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^6*c^4/(d*x+c)^5
+1/4/d*B*g*i^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^4*a-1/20/d^2*B*g*
i^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^5*b-1/20/d^2*e*B*g*i^3*b^2/(
1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^5-1/12*d^2*e^3*B*g*i^3/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)^3*a^4*c+1/2*d*B*g*i^3/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)*d)*a^3*c^2-1/4*d^2*B*g*i^3/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
d)*a^4*c-1/2*B*g*i^3/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*c^3+1/2
0*d^3*B*g*i^3/b^4*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^5+1/4*d^3*e^4*
A*g*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^5+1/20*d^3*e^4*B*g*i^3/(1/(d*
x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^5+2*d*e^5*A*g*i^3*b^3/(1/(d*x+c)*a*d*e-1/(d
*x+c)*b*c*e)^5*a^3*c^2+5/2*d*e^4*A*g*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^
4*a^3*b^2*c^2+1/12/d*e^3*B*g*i^3*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^
4*a-5/4*d^2*e^4*A*g*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^4*b*c+1/8*d^2
*e^2*B*g*i^3/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4*c-1/8/d*e^2*B*g*i^3*
b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c^4+1/6*d*e^3*B*g*i^3/(1/(d*x+c)*
a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c^2*b-d^2*e^5*A*g*i^3*b^2/(1/(d*x+c)*a*d*e-1/(
d*x+c)*b*c*e)^5*a^4*c-1/4*d^2*e*B*g*i^3/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*
e)*a^4*c+1/2*d*e*B*g*i^3/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3*c^2+1/d*e^
5*A*g*i^3*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*c^4*a+5/4/d*e^4*A*g*i^3/(
1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*b^4*c^4*a-1/4*d^2*e^4*B*g*i^3/(1/(d*x+c)
*a*d*e-1/(d*x+c)*b*c*e)^4*a^4*b*c+1/2*d*e^4*B*g*i^3/(1/(d*x+c)*a*d*e-1/(d*x
+c)*b*c*e)^4*a^3*b^2*c^2+1/4/d*e^4*B*g*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e
)^4*b^4*c^4*a+1/4/d*e*B*g*i^3*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^4*a-1/5
/d^2*e^5*B*g*i^3*b^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*
x+c)*b*c*e)^5*c^5-1/4/d^2*e^4*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d
*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^5*b^5+1/5*d^3*e^5*B*g*i^3*b*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^5-5/2*e^4*B*g*i^3*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*
c^3-2*e^5*B*g*i^3*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d
*x+c)*b*c*e)^5*a^2*c^3-9*d^5*e^4*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b^
2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^7*c^2/(d*x+c)^4-24*d*e^5*B*g*i^3*b^
3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^3*c
```

```
^7/(d*x+c)^5-2/d*e^5*B*g*i^3*b^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)
*a*d*e-1/(d*x+c)*b*c*e)^5*a*c^9/(d*x+c)^5-2*d^7*e^5*B*g*i^3/b^3*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^9*c/(d*x+c)^5+9*
d^6*e^5*B*g*i^3/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x
+c)*b*c*e)^5*a^8*c^2/(d*x+c)^5+42*d^2*e^5*B*g*i^3*b^2*ln(b/d*e+(a*d-b*c)/(d
*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^4*c^6/(d*x+c)^5-24*d^5*e^5
*B*g*i^3/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e
)^5*a^7*c^3/(d*x+c)^5-252/5*d^3*e^5*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^5*c^5/(d*x+c)^5*b+63/2*d^2*e^4*B*g*i
^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^5/
(d*x+c)^4*a^4*b-21*d*e^4*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)
*a*d*e-1/(d*x+c)*b*c*e)^4*c^6/(d*x+c)^4*a^3*b^2-9/4/d*e^4*B*g*i^3*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^8/(d*x+c)^4*a*
b^4+21*d^4*e^4*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b/(1/(d*x+c)*a*d*e-1
/(d*x+c)*b*c*e)^4*a^6*c^3/(d*x+c)^4+9/4*d^6*e^4*B*g*i^3*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)/b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^8/(d*x+c)^4*c-1/4*d^
7*e^4*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b^4/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)^4*a^9/(d*x+c)^4+5/4/d*e^4*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a*c^4+2*d*e^5*B*g*i^3*b^3*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^3*c^2+1/5/d^2*
e^5*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*
e)^5*c^10/(d*x+c)^5*b^6+1/4/d^2*e^4*B*g*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^9/(d*x+c)^4*b^5-63/2*d^3*e^4*B*g*i^3
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^5*c^
4/(d*x+c)^4+1/5*d^8*e^5*B*g*i^3/b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x
+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^10/(d*x+c)^5-1/4/d^2*e^4*A*g*i^3/(1/(d*x+c)*
a*d*e-1/(d*x+c)*b*c*e)^4*b^5*c^5-1/5/d^2*e^5*A*g*i^3*b^6/(1/(d*x+c)*a*d*e-1
/(d*x+c)*b*c*e)^5*c^5-2*e^5*A*g*i^3*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5
*a^2*c^3-5/2*e^4*A*g*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*b^3*c^3+1/
4*e^2*B*g*i^3*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c^3-1/2*e^4*B*g*i^3
/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^2*b^3*c^3-1/6*e^3*B*g*i^3*b^2/(1/(d*
x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c^3+1/20*d^3*e*B*g*i^3/b^3/(1/(d*x+c)*a*d
*e-1/(d*x+c)*b*c*e)*a^5+1/40/d^2*e^2*B*g*i^3*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)
*b*c*e)^2*c^5-1/4*d*e^2*B*g*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*c^2
-1/60/d^2*e^3*B*g*i^3*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^5-1/40*d^3*
e^2*B*g*i^3/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^5+1/4*d^3*e^4*B*g*i^3
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^5+1/
60*d^3*e^3*B*g*i^3/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^5+1/5*d^3*e^5*A*
g*i^3*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^5*a^5-1/20/d^2*e^4*B*g*i^3/(1/(d*
x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*b^5*c^5
```

maxima [B] time = 1.34, size = 1022, normalized size = 3.77

$$\frac{1}{5}Abd^3gi^3x^5+\frac{3}{4}Abcd^2gi^3x^4+\frac{1}{4}Aad^3gi^3x^4+Abc^2dgi^3x^3+Aacd^2gi^3x^3+\frac{1}{2}Abc^3gi^3x^2+\frac{3}{2}Aac^2dgi^3x^2+\left(x\log\left(\frac{bex}{dx+\cdots}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorit
hm="maxima")
```

```
[Out] 1/5*A*b*d^3*g*i^3*x^5 + 3/4*A*b*c*d^2*g*i^3*x^4 + 1/4*A*a*d^3*g*i^3*x^4 + A
*b*c^2*d*g*i^3*x^3 + A*a*c*d^2*g*i^3*x^3 + 1/2*A*b*c^3*g*i^3*x^2 + 3/2*A*a*
c^2*d*g*i^3*x^2 + (x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/
b - c*log(d*x + c)/d)*B*a*c^3*g*i^3 + 1/2*(x^2*log(b*e*x/(d*x + c) + a*e/(d
*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d
))*B*b*c^3*g*i^3 + 3/2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(
b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*a*c^2*d*g*i^3
+ 1/2*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3
- 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)
```

```
*x)/(b^2*d^2))*B*b*c^2*d*g*i^3 + 1/2*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x
+ c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d
^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*a*c*d^2*g*i^3 + 1/8*(6*x^4*
log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d
*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^
2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*b*c*d^2*g*i^3 + 1/24*(6*x^4*log(b
*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x +
c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6
*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*a*d^3*g*i^3 + 1/60*(12*x^5*log(b*e*x/(
d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d
^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6
*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*B*b*d^3
*g*i^3 + A*a*c^3*g*i^3*x
```

mupad [B] time = 5.44, size = 1192, normalized size = 4.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] x^4*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d - B*b*c))/20 - (A*d^2*g*i^3*(2
0*a*d + 20*b*c))/80) + x*((a*c*(((20*a*d + 20*b*c)*((d^2*g*i^3*(10*A*a*d +
20*A*b*c + B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(20*b*d
) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2 - 3*B*b^2*c^2 + 32*A*a
*b*c*d + 2*B*a*b*c*d))/(4*b) + A*a*c*d^2*g*i^3))/(b*d) - ((20*a*d + 20*b*c)
*(((20*a*d + 20*b*c)*(((20*a*d + 20*b*c)*((d^2*g*i^3*(10*A*a*d + 20*A*b*c +
 B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(20*b*d) - (d*g*i
^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2 - 3*B*b^2*c^2 + 32*A*a*b*c*d + 2
*B*a*b*c*d))/(4*b) + A*a*c*d^2*g*i^3))/(20*b*d) - (a*c*((d^2*g*i^3*(10*A*a*
d + 20*A*b*c + B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(b*
d) + (c*g*i^3*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^2 + 12*A*a*b
*c*d))/b))/(20*b*d) + (c^2*g*i^3*(12*A*a^2*d^2 + 2*A*b^2*c^2 + 3*B*a^2*d^2
- B*b^2*c^2 + 16*A*a*b*c*d - 2*B*a*b*c*d))/(2*b*d)) - x^3*(((20*a*d + 20*b*
c)*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*
a*d + 20*b*c))/20))/(60*b*d) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2
*d^2 - 3*B*b^2*c^2 + 32*A*a*b*c*d + 2*B*a*b*c*d))/(12*b) + (A*a*c*d^2*g*i^3
)/3) + x^2*(((20*a*d + 20*b*c)*(((20*a*d + 20*b*c)*((d^2*g*i^3*(10*A*a*d +
20*A*b*c + B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(20*b*d
) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2 - 3*B*b^2*c^2 + 32*A*a
*b*c*d + 2*B*a*b*c*d))/(4*b) + A*a*c*d^2*g*i^3))/(40*b*d) - (a*c*((d^2*g*i^
3*(10*A*a*d + 20*A*b*c + B*a*d - B*b*c))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c)
)/20))/(2*b*d) + (c*g*i^3*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2 - B*b^2*c^
2 + 12*A*a*b*c*d))/(2*b)) + log((e*(a + b*x))/(c + d*x))*((B*c^2*g*i^3*x^2*
(3*a*d + b*c))/2 + (B*d^2*g*i^3*x^4*(a*d + 3*b*c))/4 + B*a*c^3*g*i^3*x + (B
*b*d^3*g*i^3*x^5)/5 + B*c*d*g*i^3*x^3*(a*d + b*c)) + (log(c + d*x)*(B*b*c^5
*g*i^3 - 5*B*a*c^4*d*g*i^3))/(20*d^2) - (log(a + b*x)*(B*a^5*d^3*g*i^3 - 10
*B*a^2*b^3*c^3*g*i^3 - 5*B*a^4*b*c*d^2*g*i^3 + 10*B*a^3*b^2*c^2*d*g*i^3))/(
20*b^4) + (A*b*d^3*g*i^3*x^5)/5
```

sympy [B] time = 7.31, size = 1158, normalized size = 4.27

$$\frac{Abd^3gi^3x^5}{5} - \frac{Ba^2gi^3\left(a^3d^3 - 5a^2bcd^2 + 10ab^2c^2d - 10b^3c^3\right)\log\left(x + \frac{Ba^5cd^4gi^3 - 5Ba^4bc^2d^3gi^3 + 10Ba^3b^2c^3d^2gi^3 + \frac{Ba^3d^2gi^3(a^3d^3}{}}{Ba^5d^5gi^3 - 5Ba^4bcd^4}\right.}{20b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*b*d**3*g*i**3*x**5/5 - B*a**2*g*i**3*(a**3*d**3 - 5*a**2*b*c*d**2 + 10*a*
b**2*c**2*d - 10*b**3*c**3)*log(x + (B*a**5*c*d**4*g*i**3 - 5*B*a**4*b*c**2
*d**3*g*i**3 + 10*B*a**3*b**2*c**3*d**2*g*i**3 + B*a**3*d**2*g*i**3*(a**3*d
**3 - 5*a**2*b*c*d**2 + 10*a*b**2*c**2*d - 10*b**3*c**3)/b - 15*B*a**2*b**3
*c**4*d*g*i**3 - B*a**2*c*d*g*i**3*(a**3*d**3 - 5*a**2*b*c*d**2 + 10*a*b**2
*c**2*d - 10*b**3*c**3) + B*a*b**4*c**5*g*i**3)/(B*a**5*d**5*g*i**3 - 5*B*a
**4*b*c*d**4*g*i**3 + 10*B*a**3*b**2*c**2*d**3*g*i**3 - 10*B*a**2*b**3*c**3
*d**2*g*i**3 - 5*B*a*b**4*c**4*d*g*i**3 + B*b**5*c**5*g*i**3))/(20*b**4) -
B*c**4*g*i**3*(5*a*d - b*c)*log(x + (B*a**5*c*d**4*g*i**3 - 5*B*a**4*b*c**2
*d**3*g*i**3 + 10*B*a**3*b**2*c**3*d**2*g*i**3 - 15*B*a**2*b**3*c**4*d*g*i*
*3 + B*a*b**4*c**5*g*i**3 + B*a*b**3*c**4*g*i**3*(5*a*d - b*c) - B*b**4*c**
5*g*i**3*(5*a*d - b*c)/d)/(B*a**5*d**5*g*i**3 - 5*B*a**4*b*c*d**4*g*i**3 +
10*B*a**3*b**2*c**2*d**3*g*i**3 - 10*B*a**2*b**3*c**3*d**2*g*i**3 - 5*B*a*b
**4*c**4*d*g*i**3 + B*b**5*c**5*g*i**3))/(20*d**2) + x**4*(A*a*d**3*g*i**3/
4 + 3*A*b*c*d**2*g*i**3/4 + B*a*d**3*g*i**3/20 - B*b*c*d**2*g*i**3/20) + x*
*3*(A*a*c*d**2*g*i**3 + A*b*c**2*d*g*i**3 + B*a**2*d**3*g*i**3/(60*b) + B*a
*c*d**2*g*i**3/6 - 11*B*b*c**2*d*g*i**3/60) + x**2*(3*A*a*c**2*d*g*i**3/2 +
 A*b*c**3*g*i**3/2 - B*a**3*d**3*g*i**3/(40*b**2) + B*a**2*c*d**2*g*i**3/(8
*b) + B*a*c**2*d*g*i**3/8 - 9*B*b*c**3*g*i**3/40) + x*(A*a*c**3*g*i**3 + B*
a**4*d**3*g*i**3/(20*b**3) - B*a**3*c*d**2*g*i**3/(4*b**2) + B*a**2*c**2*d*
g*i**3/(2*b) - B*a*c**3*g*i**3/4 - B*b*c**4*g*i**3/(20*d)) + (B*a*c**3*g*i*
*3*x + 3*B*a*c**2*d*g*i**3*x**2/2 + B*a*c*d**2*g*i**3*x**3 + B*a*d**3*g*i**
3*x**4/4 + B*b*c**3*g*i**3*x**2/2 + B*b*c**2*d*g*i**3*x**3 + 3*B*b*c*d**2*g
*i**3*x**4/4 + B*b*d**3*g*i**3*x**5/5)*log(e*(a + b*x)/(c + d*x))
```

3.23 $\int (ci+dix)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\,dx$

Optimal. Leaf size=149

$$\frac{i^3(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4d}-\frac{Bi^3(bc-ad)^4\log(a+bx)}{4b^4d}-\frac{Bi^3x(bc-ad)^3}{4b^3}-\frac{Bi^3(c+dx)^2(bc-ad)^2}{8b^2d}-\frac{Bi^3(c+$$

```
[Out] -1/4*B*(-a*d+b*c)^3*i^3*x/b^3-1/8*B*(-a*d+b*c)^2*i^3*(d*x+c)^2/b^2/d-1/12*B
*(-a*d+b*c)*i^3*(d*x+c)^3/b/d-1/4*B*(-a*d+b*c)^4*i^3*ln(b*x+a)/b^4/d+1/4*i^
3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/d
```

Rubi [A] time = 0.08, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2525, 12, 43}

$$\frac{i^3(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4d}-\frac{Bi^3x(bc-ad)^3}{4b^3}-\frac{Bi^3(c+dx)^2(bc-ad)^2}{8b^2d}-\frac{Bi^3(bc-ad)^4\log(a+bx)}{4b^4d}-\frac{Bi^3(c+$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] -(B*(b*c - a*d)^3*i^3*x)/(4*b^3) - (B*(b*c - a*d)^2*i^3*(c + d*x)^2)/(8*b^2
*d) - (B*(b*c - a*d)*i^3*(c + d*x)^3)/(12*b*d) - (B*(b*c - a*d)^4*i^3*Log[a
 + b*x])/(4*b^4*d) + (i^3*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))
/(4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\int (23c+23dx)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right) dx = \frac{12167(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4d} - \frac{B\int \frac{279841(bc-ad)(c+dx)^3}{a+bx}dx}{92d}$$

$$= \frac{12167(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4d} - \frac{(12167B(bc-ad))\int \frac{(c+dx)}{a+bx}}{4d}$$

$$= \frac{12167(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4d} - \frac{(12167B(bc-ad))\int \left(\frac{d(bc-}{b}\right.}{}$$

$$= -\frac{12167B(bc-ad)^3x}{4b^3} - \frac{12167B(bc-ad)^2(c+dx)^2}{8b^2d} - \frac{12167B(bc-}{12}$$

Mathematica [A] time = 0.06, size = 120, normalized size = 0.81

$$\frac{i^3\left((c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-\frac{B(bc-ad)\left(3b^2(c+dx)^2(bc-ad)+6bdx(bc-ad)^2+6(bc-ad)^3\log(a+bx)+2b^3(c+dx)^3\right)}{6b^4}\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]),x]
```

```
[Out] (i^3*(-1/6*(B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d
*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]))/b^4 + (c + d*x)^
4*(A + B*Log[(e*(a + b*x))/(c + d*x)])))/(4*d)
```

fricas [B] time = 0.80, size = 322, normalized size = 2.16

$$\frac{6\,Ab^4d^4i^3x^4 - 6\,Bb^4c^4i^3\log(dx+c) + 2\left((12\,A-B)b^4cd^3 + Bab^3d^4\right)i^3x^3 + 3\left(3\,(4\,A-B)b^4c^2d^2 + 4\,Bab^3cd^3 - Ba\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="fricas")
```

```
[Out] 1/24*(6*A*b^4*d^4*i^3*x^4 - 6*B*b^4*c^4*i^3*log(d*x + c) + 2*((12*A - B)*b^
4*c*d^3 + B*a*b^3*d^4)*i^3*x^3 + 3*(3*(4*A - B)*b^4*c^2*d^2 + 4*B*a*b^3*c*d
^3 - B*a^2*b^2*d^4)*i^3*x^2 + 6*((4*A - 3*B)*b^4*c^3*d + 6*B*a*b^3*c^2*d^2
- 4*B*a^2*b^2*c*d^3 + B*a^3*b*d^4)*i^3*x + 6*(4*B*a*b^3*c^3*d - 6*B*a^2*b^2
*c^2*d^2 + 4*B*a^3*b*c*d^3 - B*a^4*d^4)*i^3*log(b*x + a) + 6*(B*b^4*d^4*i^3
*x^4 + 4*B*b^4*c*d^3*i^3*x^3 + 6*B*b^4*c^2*d^2*i^3*x^2 + 4*B*b^4*c^3*d*i^3*
x)*log((b*e*x + a*e)/(d*x + c)))/(b^4*d)
```

giac [B] time = 1.09, size = 3969, normalized size = 26.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="giac")
```

```
[Out] -1/24*(6*B*b^9*c^5*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 30*B*a*b^8
*c^4*d*i*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 60*B*a^2*b^7*c^3*d^2*i
*e^5*log(-b*e + (b*x*e + a*e)*d/(d*x + c)) - 60*B*a^3*b^6*c^2*d^3*i*e^5*log
(-b*e + (b*x*e + a*e)*d/(d*x + c)) + 30*B*a^4*b^5*c*d^4*i*e^5*log(-b*e + (b
*x*e + a*e)*d/(d*x + c)) - 6*B*a^5*b^4*d^5*i*e^5*log(-b*e + (b*x*e + a*e)*d
/(d*x + c)) - 24*(b*x*e + a*e)*B*b^8*c^5*d*i*e^4*log(-b*e + (b*x*e + a*e)*d
```

```
/(d*x + c))/(d*x + c) + 120*(b*x*e + a*e)*B*a*b^7*c^4*d^2*i*e^4*log(-b*e +
(b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 240*(b*x*e + a*e)*B*a^2*b^6*c^3*d^3*
i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) + 240*(b*x*e + a*e)*B
*a^3*b^5*c^2*d^4*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c) - 12
0*(b*x*e + a*e)*B*a^4*b^4*c*d^5*i*e^4*log(-b*e + (b*x*e + a*e)*d/(d*x + c))
/(d*x + c) + 24*(b*x*e + a*e)*B*a^5*b^3*d^6*i*e^4*log(-b*e + (b*x*e + a*e)*
d/(d*x + c))/(d*x + c) + 36*(b*x*e + a*e)^2*B*b^7*c^5*d^2*i*e^3*log(-b*e +
(b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 180*(b*x*e + a*e)^2*B*a*b^6*c^4*d^
3*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 + 360*(b*x*e + a*
e)^2*B*a^2*b^5*c^3*d^4*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c
)^2 - 360*(b*x*e + a*e)^2*B*a^3*b^4*c^2*d^5*i*e^3*log(-b*e + (b*x*e + a*e)*
d/(d*x + c))/(d*x + c)^2 + 180*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*i*e^3*log(-b
*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 36*(b*x*e + a*e)^2*B*a^5*b^2*
d^7*i*e^3*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^2 - 24*(b*x*e + a
*e)^3*B*b^6*c^5*d^3*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3
 + 120*(b*x*e + a*e)^3*B*a*b^5*c^4*d^4*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*
x + c))/(d*x + c)^3 - 240*(b*x*e + a*e)^3*B*a^2*b^4*c^3*d^5*i*e^2*log(-b*e
+ (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 + 240*(b*x*e + a*e)^3*B*a^3*b^3*c^
2*d^6*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^3 - 120*(b*x*e
+ a*e)^3*B*a^4*b^2*c*d^7*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x +
 c)^3 + 24*(b*x*e + a*e)^3*B*a^5*b*d^8*i*e^2*log(-b*e + (b*x*e + a*e)*d/(d*
x + c))/(d*x + c)^3 + 6*(b*x*e + a*e)^4*B*b^5*c^5*d^4*i*e*log(-b*e + (b*x*e
 + a*e)*d/(d*x + c))/(d*x + c)^4 - 30*(b*x*e + a*e)^4*B*a*b^4*c^4*d^5*i*e*l
og(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 + 60*(b*x*e + a*e)^4*B*a^2
*b^3*c^3*d^6*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d*x + c)^4 - 60*(b*
x*e + a*e)^4*B*a^3*b^2*c^2*d^7*i*e*log(-b*e + (b*x*e + a*e)*d/(d*x + c))/(d
*x + c)^4 + 30*(b*x*e + a*e)^4*B*a^4*b*c*d^8*i*e*log(-b*e + (b*x*e + a*e)*d
/(d*x + c))/(d*x + c)^4 - 6*(b*x*e + a*e)^4*B*a^5*d^9*i*e*log(-b*e + (b*x*e
 + a*e)*d/(d*x + c))/(d*x + c)^4 + 24*(b*x*e + a*e)*B*b^8*c^5*d*i*e^4*log((
b*x*e + a*e)/(d*x + c))/(d*x + c) - 120*(b*x*e + a*e)*B*a*b^7*c^4*d^2*i*e^4
*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 240*(b*x*e + a*e)*B*a^2*b^6*c^3*d
^3*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 240*(b*x*e + a*e)*B*a^3*b
^5*c^2*d^4*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 120*(b*x*e + a*e)
*B*a^4*b^4*c*d^5*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 24*(b*x*e +
 a*e)*B*a^5*b^3*d^6*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 36*(b*x*
e + a*e)^2*B*b^7*c^5*d^2*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 1
80*(b*x*e + a*e)^2*B*a*b^6*c^4*d^3*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x
+ c)^2 - 360*(b*x*e + a*e)^2*B*a^2*b^5*c^3*d^4*i*e^3*log((b*x*e + a*e)/(d*x
 + c))/(d*x + c)^2 + 360*(b*x*e + a*e)^2*B*a^3*b^4*c^2*d^5*i*e^3*log((b*x*e
 + a*e)/(d*x + c))/(d*x + c)^2 - 180*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*i*e^3*
log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 36*(b*x*e + a*e)^2*B*a^5*b^2*d^7
*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 24*(b*x*e + a*e)^3*B*b^6*
c^5*d^3*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 - 120*(b*x*e + a*e)^
3*B*a*b^5*c^4*d^4*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^3 + 240*(b*x
*e + a*e)^3*B*a^2*b^4*c^3*d^5*i*e^2*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^
3 - 240*(b*x*e + a*e)^3*B*a^3*b^3*c^2*d^6*i*e^2*log((b*x*e + a*e)/(d*x + c)
)/(d*x + c)^3 + 120*(b*x*e + a*e)^3*B*a^4*b^2*c*d^7*i*e^2*log((b*x*e + a*e)
/(d*x + c))/(d*x + c)^3 - 24*(b*x*e + a*e)^3*B*a^5*b*d^8*i*e^2*log((b*x*e +
 a*e)/(d*x + c))/(d*x + c)^3 - 6*(b*x*e + a*e)^4*B*b^5*c^5*d^4*i*e*log((b*x
*e + a*e)/(d*x + c))/(d*x + c)^4 + 30*(b*x*e + a*e)^4*B*a*b^4*c^4*d^5*i*e*l
og((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 60*(b*x*e + a*e)^4*B*a^2*b^3*c^3*
d^6*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 60*(b*x*e + a*e)^4*B*a^3
*b^2*c^2*d^7*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 - 30*(b*x*e + a*e
)^4*B*a^4*b*c*d^8*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 6*(b*x*e +
 a*e)^4*B*a^5*d^9*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^4 + 6*A*b^9*c^
5*i*e^5 - 11*B*b^9*c^5*i*e^5 - 30*A*a*b^8*c^4*d*i*e^5 + 55*B*a*b^8*c^4*d*i*
e^5 + 60*A*a^2*b^7*c^3*d^2*i*e^5 - 110*B*a^2*b^7*c^3*d^2*i*e^5 - 60*A*a^3*b
^6*c^2*d^3*i*e^5 + 110*B*a^3*b^6*c^2*d^3*i*e^5 + 30*A*a^4*b^5*c*d^4*i*e^5 -
 55*B*a^4*b^5*c*d^4*i*e^5 - 6*A*a^5*b^4*d^5*i*e^5 + 11*B*a^5*b^4*d^5*i*e^5
```

```
+ 26*(b*x*e + a*e)*B*b^8*c^5*d*i*e^4/(d*x + c) - 130*(b*x*e + a*e)*B*a*b^7*
c^4*d^2*i*e^4/(d*x + c) + 260*(b*x*e + a*e)*B*a^2*b^6*c^3*d^3*i*e^4/(d*x +
c) - 260*(b*x*e + a*e)*B*a^3*b^5*c^2*d^4*i*e^4/(d*x + c) + 130*(b*x*e + a*e
)*B*a^4*b^4*c*d^5*i*e^4/(d*x + c) - 26*(b*x*e + a*e)*B*a^5*b^3*d^6*i*e^4/(d
*x + c) - 21*(b*x*e + a*e)^2*B*b^7*c^5*d^2*i*e^3/(d*x + c)^2 + 105*(b*x*e +
 a*e)^2*B*a*b^6*c^4*d^3*i*e^3/(d*x + c)^2 - 210*(b*x*e + a*e)^2*B*a^2*b^5*c
^3*d^4*i*e^3/(d*x + c)^2 + 210*(b*x*e + a*e)^2*B*a^3*b^4*c^2*d^5*i*e^3/(d*x
 + c)^2 - 105*(b*x*e + a*e)^2*B*a^4*b^3*c*d^6*i*e^3/(d*x + c)^2 + 21*(b*x*e
 + a*e)^2*B*a^5*b^2*d^7*i*e^3/(d*x + c)^2 + 6*(b*x*e + a*e)^3*B*b^6*c^5*d^3
*i*e^2/(d*x + c)^3 - 30*(b*x*e + a*e)^3*B*a*b^5*c^4*d^4*i*e^2/(d*x + c)^3 +
 60*(b*x*e + a*e)^3*B*a^2*b^4*c^3*d^5*i*e^2/(d*x + c)^3 - 60*(b*x*e + a*e)^
3*B*a^3*b^3*c^2*d^6*i*e^2/(d*x + c)^3 + 30*(b*x*e + a*e)^3*B*a^4*b^2*c*d^7*
i*e^2/(d*x + c)^3 - 6*(b*x*e + a*e)^3*B*a^5*b*d^8*i*e^2/(d*x + c)^3)*(b*c/(
(b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b^8*d*e^
4 - 4*(b*x*e + a*e)*b^7*d^2*e^3/(d*x + c) + 6*(b*x*e + a*e)^2*b^6*d^3*e^2/(
d*x + c)^2 - 4*(b*x*e + a*e)^3*b^5*d^4*e/(d*x + c)^3 + (b*x*e + a*e)^4*b^4*
d^5/(d*x + c)^4)
```

maple [B] time = 0.14, size = 2172, normalized size = 14.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A),x)
```

```
[Out] -B*i^3/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^3*a+1/4*d^3*e^4*A*i^3/(
1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^4+1/4*d^3*B*i^3/b^4*ln(-b*e+(b/d*e+(a*
d-b*c)/(d*x+c)/d*e)*d)*a^4-e*B*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*c^3+
1/4/d*B*i^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^4-1/3*e^3*B*i^3*b^2/
(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^3*a+1/4*d^3*e*B*i^3/b^3/(1/(d*x+c)*a*
d*e-1/(d*x+c)*b*c*e)*a^4+1/4/d*e*B*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^
4*b+1/2*e^2*B*i^3*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3*a+3/2*d*e*B*i^3
/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2*c^2+1/4/d*e^4*B*i^3*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^4-e^4*B*i^3*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a*c^3-
d^2*e^4*B*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*
c*e)^4*a^3*b*c-1/4/d*e^4*B*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^4/(1/(d*x+
c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^8/(d*x+c)^4-35/2*d^3*e^4*B*i^3*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^4/(d*x+c)^4*c^4+3/2
*d*e^4*B*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)
*b*c*e)^4*a^2*c^2+2*e^4*B*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(1/(d*x+c
)*a*d*e-1/(d*x+c)*b*c*e)^4*c^7/(d*x+c)^4*a-1/4*d^7*e^4*B*i^3*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)/b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^8/(d*x+c)^4+1/4
*d^3*e^4*B*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b
*c*e)^4*a^4-3/4*d*e^2*B*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c^2+3/2
*d*B*i^3/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*c^2+1/12*d^3*e^3*
B*i^3/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^4-e^4*A*i^3/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)^4*b^3*c^3*a+14*d^4*e^4*B*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^5/(d*x+c)^4*c^3+14*d^2*e^4*B*i^3
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*c^5/
(d*x+c)^4*a^3-d^2*B*i^3/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3*c-
d^2*e*B*i^3/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3*c-d^2*e^4*A*i^3/(1/(d
*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^3*b*c+1/2*d*e^3*B*i^3/(1/(d*x+c)*a*d*e-1/(
d*x+c)*b*c*e)^3*a^2*c^2*b+3/2*d*e^4*A*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)
^4*a^2*c^2*b^2+1/2*d^2*e^2*B*i^3/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*
c-1/8*d^3*e^2*B*i^3/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4-1/8/d*e^2*B
*i^3*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^4-1/3*d^2*e^3*B*i^3/(1/(d*x+
c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c+1/4/d*e^4*A*i^3/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)^4*b^4*c^4+1/12/d*e^3*B*i^3*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3
*c^4+2*d^6*e^4*B*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b^3/(1/(d*x+c)*a*d*e-1
```

```
/(d*x+c)*b*c*e)^4*a^7/(d*x+c)^4*c-7*d^5*e^4*B*i^3*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4*a^6/(d*x+c)^4*c^2-7*d*e^4*B*
i^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^4
*c^6/(d*x+c)^4*a^2
```

maxima [B] time = 1.15, size = 439, normalized size = 2.95

$$\frac{1}{4}Ad^3i^3x^4+Acd^2i^3x^3+\frac{3}{2}Ac^2di^3x^2+\left(x\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)+\frac{a\log(bx+a)}{b}-\frac{c\log(dx+c)}{d}\right)Bc^3i^3+\frac{3}{2}\left(x^2\log\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c))),x, algorithm="maxima")
```

```
[Out] 1/4*A*d^3*i^3*x^4 + A*c*d^2*i^3*x^3 + 3/2*A*c^2*d*i^3*x^2 + (x*log(b*e*x/(d
*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*B*c^3*i^3 +
 3/2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2
*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*B*c^2*d*i^3 + 1/2*(2*x^3*log(b*e*x
/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d
^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*B*c*d^2
*i^3 + 1/24*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a
)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^
2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*B*d^3*i^3 + A*c^
3*i^3*x
```

mupad [B] time = 4.80, size = 566, normalized size = 3.80

$$x\left(\frac{(4ad+4bc)\left(\frac{\left(\frac{d^2i^3(4Aad+16Abc+Bad-Bbc)}{4b}-\frac{Ad^2i^3(4ad+4bc)}{4b}\right)(4ad+4bc)}{4bd}-\frac{cdi^3(4Aad+6Abc+Bad-Bbc)}{b}+\frac{Aacd^2i^3}{b}\right)}{4bd}+\frac{c^2}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))),x)
```

```
[Out] x*(((4*a*d + 4*b*c)*((((d^2*i^3*(4*A*a*d + 16*A*b*c + B*a*d - B*b*c))/(4*b)
 - (A*d^2*i^3*(4*a*d + 4*b*c))/(4*b))*(4*a*d + 4*b*c))/(4*b*d) - (c*d*i^3*(
4*A*a*d + 6*A*b*c + B*a*d - B*b*c))/b + (A*a*c*d^2*i^3)/b))/(4*b*d) + (c^2*
i^3*(12*A*a*d + 8*A*b*c + 3*B*a*d - 3*B*b*c))/(2*b) - (a*c*((d^2*i^3*(4*A*a
*d + 16*A*b*c + B*a*d - B*b*c))/(4*b) - (A*d^2*i^3*(4*a*d + 4*b*c))/(4*b)))
/(b*d)) - x^2*((((d^2*i^3*(4*A*a*d + 16*A*b*c + B*a*d - B*b*c))/(4*b) - (A*
d^2*i^3*(4*a*d + 4*b*c))/(4*b))*(4*a*d + 4*b*c))/(8*b*d) - (c*d*i^3*(4*A*a*
d + 6*A*b*c + B*a*d - B*b*c))/(2*b) + (A*a*c*d^2*i^3)/(2*b)) + log((e*(a +
b*x))/(c + d*x))*((B*d^3*i^3*x^4)/4 + B*c^3*i^3*x + (3*B*c^2*d*i^3*x^2)/2 +
 B*c*d^2*i^3*x^3) + x^3*((d^2*i^3*(4*A*a*d + 16*A*b*c + B*a*d - B*b*c))/(12
*b) - (A*d^2*i^3*(4*a*d + 4*b*c))/(12*b)) - (log(a + b*x)*(B*a^4*d^3*i^3 -
4*B*a*b^3*c^3*i^3 + 6*B*a^2*b^2*c^2*d*i^3 - 4*B*a^3*b*c*d^2*i^3))/(4*b^4) +
 (A*d^3*i^3*x^4)/4 - (B*c^4*i^3*log(c + d*x))/(4*d)
```

sympy [B] time = 4.12, size = 706, normalized size = 4.74

$$\frac{Ad^3i^3x^4}{4}-\frac{Bai^3(ad-2bc)\left(a^2d^2-2abcd+2b^2c^2\right)\log\left(x+\frac{Ba^4cd^3i^3-4Ba^3bc^2d^2i^3+6Ba^2b^2c^3di^3+\frac{Ba^2di^3(ad-2bc)\left(a^2d^2-2abcd+2b^2c^2\right.}{b}}{Ba^4d^4i^3-4Ba^3bcd^3i^3+6Ba^2b^2c^2d^2i^3-4}\right.}{4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c))),x)
```

```
[Out] A*d**3*i**3*x**4/4 - B*a*i**3*(a*d - 2*b*c)*(a**2*d**2 - 2*a*b*c*d + 2*b**2
*c**2)*log(x + (B*a**4*c*d**3*i**3 - 4*B*a**3*b*c**2*d**2*i**3 + 6*B*a**2*b
**2*c**3*d*i**3 + B*a**2*d*i**3*(a*d - 2*b*c)*(a**2*d**2 - 2*a*b*c*d + 2*b*
*2*c**2)/b - 5*B*a*b**3*c**4*i**3 - B*a*c*i**3*(a*d - 2*b*c)*(a**2*d**2 - 2
*a*b*c*d + 2*b**2*c**2))/(B*a**4*d**4*i**3 - 4*B*a**3*b*c*d**3*i**3 + 6*B*a
**2*b**2*c**2*d**2*i**3 - 4*B*a*b**3*c**3*d*i**3 - B*b**4*c**4*i**3))/(4*b*
*4) - B*c**4*i**3*log(x + (B*a**4*c*d**3*i**3 - 4*B*a**3*b*c**2*d**2*i**3 +
 6*B*a**2*b**2*c**3*d*i**3 - 4*B*a*b**3*c**4*i**3 - B*b**4*c**5*i**3/d)/(B*
a**4*d**4*i**3 - 4*B*a**3*b*c*d**3*i**3 + 6*B*a**2*b**2*c**2*d**2*i**3 - 4*
B*a*b**3*c**3*d*i**3 - B*b**4*c**4*i**3))/(4*d) + x**3*(A*c*d**2*i**3 + B*a
*d**3*i**3/(12*b) - B*c*d**2*i**3/12) + x**2*(3*A*c**2*d*i**3/2 - B*a**2*d*
*3*i**3/(8*b**2) + B*a*c*d**2*i**3/(2*b) - 3*B*c**2*d*i**3/8) + x*(A*c**3*i
**3 + B*a**3*d**3*i**3/(4*b**3) - B*a**2*c*d**2*i**3/b**2 + 3*B*a*c**2*d*i*
*3/(2*b) - 3*B*c**3*i**3/4) + (B*c**3*i**3*x + 3*B*c**2*d*i**3*x**2/2 + B*c
*d**2*i**3*x**3 + B*d**3*i**3*x**4/4)*log(e*(a + b*x)/(c + d*x))
```

3.24 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{ag+bgx}\,dx$

Optimal. Leaf size=356

$$\frac{di^3(a+bx)(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g}-\frac{i^3(bc-ad)^3\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g}+\frac{i^3(c+dx)^2(bc}{}$$

```
[Out] -5/6*B*d*(-a*d+b*c)^2*i^3*x/b^3/g-1/6*B*(-a*d+b*c)*i^3*(d*x+c)^2/b^2/g-5/6*
B*(-a*d+b*c)^3*i^3*ln((b*x+a)/(d*x+c))/b^4/g+d*(-a*d+b*c)^2*i^3*(b*x+a)*(A+
B*ln(e*(b*x+a)/(d*x+c)))/b^4/g+1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*ln(e*(b*x+
a)/(d*x+c)))/b^2/g+1/3*i^3*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/b/g-11/6*B
*(-a*d+b*c)^3*i^3*ln(d*x+c)/b^4/g-(-a*d+b*c)^3*i^3*(A+B*ln(e*(b*x+a)/(d*x+c
)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g+B*(-a*d+b*c)^3*i^3*polylog(2,b*(d*x+c)/
d/(b*x+a))/b^4/g
```

Rubi [A] time = 0.60, antiderivative size = 436, normalized size of antiderivative = 1.22, number of steps used = 23, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2486, 31, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 43}

$$\frac{Bi^3(bc-ad)^3\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^4g}+\frac{i^3(c+dx)^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^2g}+\frac{i^3(bc-ad)^3\log(ag+bgx)\left(B\right.}{b^4g}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x),x]
```

```
[Out] (A*d*(b*c - a*d)^2*i^3*x)/(b^3*g) - (5*B*d*(b*c - a*d)^2*i^3*x)/(6*b^3*g) -
 (B*(b*c - a*d)*i^3*(c + d*x)^2)/(6*b^2*g) - (5*B*(b*c - a*d)^3*i^3*Log[a +
 b*x])/(6*b^4*g) - (B*(b*c - a*d)^3*i^3*Log[g*(a + b*x)]^2)/(2*b^4*g) + (B*
d*(b*c - a*d)^2*i^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(b^4*g) + ((b*c
 - a*d)*i^3*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b^2*g) + (
i^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b*g) - (B*(b*c - a
*d)^3*i^3*Log[c + d*x])/(b^4*g) + ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x
))/(c + d*x)])*Log[a*g + b*g*x])/(b^4*g) + (B*(b*c - a*d)^3*i^3*Log[(b*(c +
 d*x))/(b*c - a*d)]*Log[a*g + b*g*x])/(b^4*g) + (B*(b*c - a*d)^3*i^3*PolyLo
g[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(24c+24dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{ag+bgx}\,dx = \int \left(\frac{13824d(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g} + \frac{576d(bc-ad)(24c\right.$$

$$= \frac{\left(13824(bc-ad)^3\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{ag+bgx}\,dx}{b^3} + \frac{(24d)\int (24c+24dx)^2\left(A\right.}{bg}$$

$$= \frac{13824Ad(bc-ad)^2x}{b^3g} + \frac{6912(bc-ad)(c+dx)^2\left(A+B\log\left(\frac{e(a+bx}{c+dx}\right.\right.}{b^2g}$$

$$= \frac{13824Ad(bc-ad)^2x}{b^3g} + \frac{13824Bd(bc-ad)^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^4g} +$$

$$= \frac{13824Ad(bc-ad)^2x}{b^3g} + \frac{13824Bd(bc-ad)^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^4g} +$$

$$= \frac{13824Ad(bc-ad)^2x}{b^3g} - \frac{11520Bd(bc-ad)^2x}{b^3g} - \frac{2304B(bc-ad)(c-}{b^2g}$$

$$= \frac{13824Ad(bc-ad)^2x}{b^3g} - \frac{11520Bd(bc-ad)^2x}{b^3g} - \frac{2304B(bc-ad)(c-}{b^2g}$$

$$= \frac{13824Ad(bc-ad)^2x}{b^3g} - \frac{11520Bd(bc-ad)^2x}{b^3g} - \frac{2304B(bc-ad)(c-}{b^2g}$$

$$= \frac{13824Ad(bc-ad)^2x}{b^3g} - \frac{11520Bd(bc-ad)^2x}{b^3g} - \frac{2304B(bc-ad)(c-}{b^2g}$$

Mathematica [A] time = 0.27, size = 352, normalized size = 0.99

$$\frac{i^3\left(2b^3(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+3b^2(c+dx)^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+6(bc-ad)^3\log(g(a+bx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x),x]
```

```
[Out] (i^3*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*(b*d*x + (b*c - a*d)*Log[
a + b*x]) - B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c -
 a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c
```

```
+ d*x)] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]
) + 2*b^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*(b*c - a*d)^
3*Log[g*(a + b*x)]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*c - a*d)^3
*Log[c + d*x] - 3*B*(b*c - a*d)^3*(Log[g*(a + b*x)]*(Log[g*(a + b*x)] - 2*L
og[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]
)))/(6*b^4*g)
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^3i^3x^3 + 3\,Acd^2i^3x^2 + 3\,Ac^2di^3x + Ac^3i^3 + \left(Bd^3i^3x^3 + 3\,Bcd^2i^3x^2 + 3\,Bc^2di^3x + Bc^3i^3\right)\log\left(\frac{bex+ae}{dx+c}\right)}{bgx + ag}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorit
hm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 +
 (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log((b*e
*x + a*e)/(d*x + c)))/(b*g*x + a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.16, size = 4594, normalized size = 12.90

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g),x)
```

```
[Out] -A*i^3/g/b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^3+11/6*B*i^3/g/b*ln(-
b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^3-B*i^3/g/b*dilog(-(-b*e+(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)*d)/b/e)*c^3+A*i^3/g/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c^
3+5/6*e*B*i^3/g/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^3-e*A*i^3/g/(1/(d*x+c)*
a*d*e-1/(d*x+c)*b*c*e)*c^3+1/2*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b*
c^3+d^3*B*i^3/g/b^4*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^3-
1/2*d^3*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^4*a^3-e*B*i^3/g*ln(b/d*
e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^3-5/2*d^4*e^2*
B*i^3/g/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*
e)^2*a^4*c/(d*x+c)^2+5*d^3*e^2*B*i^3/g/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/
(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*c^2/(d*x+c)^2-2*d^5*e^3*B*i^3/g/b^3
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^5*c/
(d*x+c)^3+5*d^4*e^3*B*i^3/g/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*
a*d*e-1/(d*x+c)*b*c*e)^3*a^4*c^2/(d*x+c)^3-20/3*d^3*e^3*B*i^3/g/b*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3*c^3/(d*x+c)^
3-4*d^3*e*B*i^3/g/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d
*x+c)*b*c*e)*a^3*c/(d*x+c)+6*d^2*e*B*i^3/g/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2*c^2/(d*x+c)-4*d*e*B*i^3/g/b*ln(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*c^3/(d*x+c)-
5*d^2*e^2*B*i^3/g/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x
+c)*b*c*e)^2*a^2*c^3/(d*x+c)^2-2*d*e^3*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
```

```
*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a*c^5/(d*x+c)^3*b+1/2*d^5*e^2*B*i^3
/g/b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*
a^5/(d*x+c)^2+3/2*d^2*e^2*B*i^3/g/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x
+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c+d^4*e*B*i^3/g/b^4*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^4/(d*x+c)+5/2*d*e^2*B*i^3/g*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c^4/(d
*x+c)^2+5*d^2*e^3*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)^3*a^2*c^4/(d*x+c)^3+d*e^3*B*i^3/g*b*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^2*a+1/3*d^6*e^3*B*i^3/g/b^4
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^6/(d
*x+c)^3-3*d^2*e*B*i^3/g/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*
e-1/(d*x+c)*b*c*e)*a^2*c-d^3*A*i^3/g/b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a^
3-11/6*d^3*B*i^3/g/b^4*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3-B*i^3/g
/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
d)/b/e)*c^3+d^3*A*i^3/g/b^4*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3-1/
6*e^2*B*i^3/g/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3*b-1/3*e^3*A*i^3/g*b^2
/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^3+1/2*e^2*A*i^3/g/(1/(d*x+c)*a*d*e-1
/(d*x+c)*b*c*e)^2*c^3*b-5/2*d*e*B*i^3/g/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)
*a*c^2-3*d^2*e*A*i^3/g/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2*c+3*d*e*A*
i^3/g/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*c^2-1/2*d^2*e^2*B*i^3/g/b/(1/(d
*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c+d*e^3*A*i^3/g/(1/(d*x+c)*a*d*e-1/(d*x+
c)*b*c*e)^3*a*c^2*b+3/2*d^2*e^2*A*i^3/g/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)
^2*a^2*c-1/2*e^2*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1
/(d*x+c)*b*c*e)^2*c^5/(d*x+c)^2*b-1/2*d^3*e^2*B*i^3/g/b^2*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3+1/3*d^3*e^3*B*i^3/g/
b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3-3
/2*d*e^2*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)
*b*c*e)^2*c^2*a-d^2*e^3*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*
a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c-3*d^2*B*i^3/g/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2*c+3*d*B*i^3/g/b^2
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)
/b/e)*a*c^2+1/3*e^3*B*i^3/g*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*
a*d*e-1/(d*x+c)*b*c*e)^3*c^6/(d*x+c)^3+d^3*e*B*i^3/g/b^3*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3-11/2*d*B*i^3/g/b^2*ln(-
b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2*a+11/2*d^2*B*i^3/g/b^3*ln(-b*e+(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*c-1/3*e^3*B*i^3/g*b^2*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^3+1/2*e^2*B*i^3/g*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3*b+d^3*B*i
^3/g/b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)*d)/b/e)*a^3-3*d^2*A*i^3/g/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d
)*a^2*c+3*d*e*B*i^3/g/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)*a*c^2+5/2*d^2*e*B*i^3/g/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e
)*a^2*c-d^2*e^3*A*i^3/g/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c+d^3*e*A*i
^3/g/b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3-5/6*d^3*e*B*i^3/g/b^3/(1/(d*
x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3+1/6*d^3*e^2*B*i^3/g/b^2/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)^2*a^3-3/2*d*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^2*c^
2*a+1/3*d^3*e^3*A*i^3/g/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3-1/2*d^3*e
^2*A*i^3/g/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3+1/2*d*e^2*B*i^3/g/(1
/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2*a-3/2*d*e^2*A*i^3/g/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)^2*c^2*a+3/2*d^2*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/
b^3*a^2*c+e*B*i^3/g*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x
+c)*b*c*e)*c^4/(d*x+c)+3*d^2*A*i^3/g/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a^
2*c+3*d*A*i^3/g/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2*a+3*d*B*i^
3/g/b^2*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c^2*a-3*d^2*B*i^
3/g/b^3*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2*c-3*d*A*i^3/
g/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c^2*a
```

maxima [B] time = 1.85, size = 850, normalized size = 2.39

$$3\,Ac^2di^3\left(\frac{x}{bg}-\frac{a\log\left(bx+a\right)}{b^2g}\right)-\frac{1}{6}\,Ad^3i^3\left(\frac{6\,a^3\log\left(bx+a\right)}{b^4g}-\frac{2\,b^2x^3-3\,abx^2+6\,a^2x}{b^3g}\right)+\frac{3}{2}\,Acd^2i^3\left(\frac{2\,a^2\log\left(bx+a\right)}{b^3g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x, algorit
hm="maxima")
```

```
[Out] 3*A*c^2*d*i^3*(x/(b*g) - a*log(b*x + a)/(b^2*g)) - 1/6*A*d^3*i^3*(6*a^3*log
(b*x + a)/(b^4*g) - (2*b^2*x^3 - 3*a*b*x^2 + 6*a^2*x)/(b^3*g)) + 3/2*A*c*d^
2*i^3*(2*a^2*log(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A*c^3*i^3*lo
g(b*g*x + a*g)/(b*g) - 1/6*(11*b^2*c^3*i^3 - 15*a*b*c^2*d*i^3 + 6*a^2*c*d^2
*i^3)*B*log(d*x + c)/(b^3*g) + (b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c
*d^2*i^3 - a^3*d^3*i^3)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) +
dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^4*g) + 1/6*(2*B*b^3*d^3*i^3*x^3*log
(e) + ((9*i^3*log(e) - i^3)*b^3*c*d^2 - (3*i^3*log(e) - i^3)*a*b^2*d^3)*B*x
^2 + 3*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3 - a^3*d^3*i^3)*
B*log(b*x + a)^2 + ((18*i^3*log(e) - 7*i^3)*b^3*c^2*d - 6*(3*i^3*log(e) - 2
*i^3)*a*b^2*c*d^2 + (6*i^3*log(e) - 5*i^3)*a^2*b*d^3)*B*x + (2*B*b^3*d^3*i^
3*x^3 + 3*(3*b^3*c*d^2*i^3 - a*b^2*d^3*i^3)*B*x^2 + 6*(3*b^3*c^2*d*i^3 - 3*
a*b^2*c*d^2*i^3 + a^2*b*d^3*i^3)*B*x + (6*b^3*c^3*i^3*log(e) - 18*(i^3*log(
e) - i^3)*a*b^2*c^2*d + 9*(2*i^3*log(e) - 3*i^3)*a^2*b*c*d^2 - (6*i^3*log(e
) - 11*i^3)*a^3*d^3)*B)*log(b*x + a) - (2*B*b^3*d^3*i^3*x^3 + 3*(3*b^3*c*d^
2*i^3 - a*b^2*d^3*i^3)*B*x^2 + 6*(3*b^3*c^2*d*i^3 - 3*a*b^2*c*d^2*i^3 + a^2
*b*d^3*i^3)*B*x + 6*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3 -
a^3*d^3*i^3)*B*log(b*x + a))*log(d*x + c))/(b^4*g)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,i+d\,i\,x\right)}^3\,\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}{a\,g+b\,g\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x),x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x), x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g),x)
```

```
[Out] Timed out
```

3.25 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=373

$$\frac{2d^2i^3(a+bx)(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^2}-\frac{3di^3(bc-ad)^2\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^2}-\frac{i^3(c+dx)}{}$$

```
[Out] -1/2*B*d^2*(-a*d+b*c)*i^3*x/b^3/g^2-B*(-a*d+b*c)^2*i^3*(d*x+c)/b^3/g^2/(b*x
+a)-1/2*B*d*(-a*d+b*c)^2*i^3*ln((b*x+a)/(d*x+c))/b^4/g^2+2*d^2*(-a*d+b*c)*i
^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^4/g^2-(-a*d+b*c)^2*i^3*(d*x+c)*(A+
B*ln(e*(b*x+a)/(d*x+c)))/b^3/g^2/(b*x+a)+1/2*d*i^3*(d*x+c)^2*(A+B*ln(e*(b*x
+a)/(d*x+c)))/b^2/g^2-5/2*B*d*(-a*d+b*c)^2*i^3*ln(d*x+c)/b^4/g^2-3*d*(-a*d+
b*c)^2*i^3*(A+B*ln(e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^2+3*
B*d*(-a*d+b*c)^2*i^3*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^2
```

Rubi [A] time = 0.70, antiderivative size = 521, normalized size of antiderivative = 1.40, number of steps used = 22, number of rules used = 14, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {2528, 2486, 31, 2525, 12, 72, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3Bdi^3(bc-ad)^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^4g^2}-\frac{a^2Bd^3i^3\log(a+bx)}{2b^4g^2}+\frac{d^3i^3x^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^2g^2}+\frac{3di^3(bc-ad)^2\log(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^2,
x]
```

```
[Out] (A*d^2*(3*b*c - 2*a*d)*i^3*x)/(b^3*g^2) - (B*d^2*(b*c - a*d)*i^3*x)/(2*b^3*
g^2) - (B*(b*c - a*d)^3*i^3)/(b^4*g^2*(a + b*x)) - (a^2*B*d^3*i^3*Log[a + b
*x])/(2*b^4*g^2) - (B*d*(b*c - a*d)^2*i^3*Log[a + b*x])/(b^4*g^2) - (3*B*d*
(b*c - a*d)^2*i^3*Log[a + b*x]^2)/(2*b^4*g^2) + (B*d^2*(3*b*c - 2*a*d)*i^3*
(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(b^4*g^2) + (d^3*i^3*x^2*(A + B*Log
[(e*(a + b*x))/(c + d*x)]))/(2*b^2*g^2) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*
(a + b*x))/(c + d*x)]))/(b^4*g^2*(a + b*x)) + (3*d*(b*c - a*d)^2*i^3*Log[a
+ b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^4*g^2) + (B*c^2*d*i^3*Log[c
 + d*x])/(2*b^2*g^2) - (B*d*(3*b*c - 2*a*d)*(b*c - a*d)*i^3*Log[c + d*x])/(
b^4*g^2) + (B*d*(b*c - a*d)^2*i^3*Log[c + d*x])/(b^4*g^2) + (3*B*d*(b*c - a
*d)^2*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g^2) + (3*B*d*(
b*c - a*d)^2*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(25c+25dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^2}\,dx = \int \left(\frac{15625d^2(3bc-2ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^2}+\frac{15625d^3x\left(A+B\right.}{b^2g}\right.$$

$$=\frac{\left(15625d^3\right)\int x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{b^2g^2}+\frac{\left(15625d^2(3bc-2ad)\right)}{b}$$

$$=\frac{15625Ad^2(3bc-2ad)x}{b^3g^2}+\frac{15625d^3x^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2b^2g^2}-\frac{156}{}$$

$$=\frac{15625Ad^2(3bc-2ad)x}{b^3g^2}+\frac{15625Bd^2(3bc-2ad)(a+bx)\log\left(\frac{e(a+b}{c+d}\right.}{b^4g^2}$$

$$=\frac{15625Ad^2(3bc-2ad)x}{b^3g^2}+\frac{15625Bd^2(3bc-2ad)(a+bx)\log\left(\frac{e(a+b}{c+d}\right.}{b^4g^2}$$

$$=\frac{15625Ad^2(3bc-2ad)x}{b^3g^2}-\frac{15625Bd^2(bc-ad)x}{2b^3g^2}-\frac{15625B(bc-ad}{b^4g^2(a+bx)}$$

$$=\frac{15625Ad^2(3bc-2ad)x}{b^3g^2}-\frac{15625Bd^2(bc-ad)x}{2b^3g^2}-\frac{15625B(bc-ad}{b^4g^2(a+bx)}$$

$$=\frac{15625Ad^2(3bc-2ad)x}{b^3g^2}-\frac{15625Bd^2(bc-ad)x}{2b^3g^2}-\frac{15625B(bc-ad}{b^4g^2(a+bx)}$$

$$=\frac{15625Ad^2(3bc-2ad)x}{b^3g^2}-\frac{15625Bd^2(bc-ad)x}{2b^3g^2}-\frac{15625B(bc-ad}{b^4g^2(a+bx)}$$

Mathematica [A] time = 0.39, size = 374, normalized size = 1.00

$$i^3\left(-a^2Bd^3\log(a+bx)+b^2d^3x^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+6d(bc-ad)^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-\frac{2(bc-}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x)^2,x]
```

```
[Out] (i^3*(2*A*b*d^2*(3*b*c - 2*a*d)*x - b*B*d^2*(b*c - a*d)*x - (2*B*(b*c - a*d
)^3)/(a + b*x) - a^2*B*d^3*Log[a + b*x] - 2*B*d*(b*c - a*d)^2*Log[a + b*x]
+ 2*B*d^2*(3*b*c - 2*a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + b^2*d^3*
x^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - (2*(b*c - a*d)^3*(A + B*Log[(e*(
a + b*x))/(c + d*x)]))/(a + b*x) + 6*d*(b*c - a*d)^2*Log[a + b*x]*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]) + b^2*B*c^2*d*Log[c + d*x] + 2*B*d*(b*c - a*d)^
2*Log[c + d*x] - 2*B*d*(-(b*c) + a*d)*(-3*b*c + 2*a*d)*Log[c + d*x] - 3*B*d
*(b*c - a*d)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d
)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(2*b^4*g^2)
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^3i^3x^3 + 3\,Acd^2i^3x^2 + 3\,Ac^2di^3x + Ac^3i^3 + \left(Bd^3i^3x^3 + 3\,Bcd^2i^3x^2 + 3\,Bc^2di^3x + Bc^3i^3\right)\log\left(\frac{bex+ae}{dx+c}\right)}{b^2g^2x^2 + 2\,abg^2x + a^2g^2},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algor
ithm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 +
 (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log((b*e
*x + a*e)/(d*x + c)))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.15, size = 3141, normalized size = 8.42

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2,x)
```

```
[Out] 2*d^4*e^2*B*i^3/g^2/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)^2*c/(d*x+c)^2*a^3-3*d^3*e^2*B*i^3/g^2/b^2*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2/(d*x+c)^2*a^2+2*d^2*e
^2*B*i^3/g^2/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b
*c*e)^2*c^3/(d*x+c)^2*a+6*d^3*e*B*i^3/g^2/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2/(d*x+c)*c-6*d^2*e*B*i^3/g^2/b^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a/(d*x+c)*c
^2-6*d^2*A*i^3/g^2/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c*a+6*d^2*A*i^3/g^2/
b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c*a-5*d^2*B*i^3/g^2/b^3*ln(-b*
e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a*c-3*d^2*B*i^3/g^2*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)^2/b^3*a*c+1/2*d^3*e^2*A*i^3/g^2/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*
b*c*e)^2*a^2-2*d^3*e*A*i^3/g^2/b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2+1/
2*d*e^2*B*i^3/g^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)^2*c^2-3*d^3*B*i^3/g^2/b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*
e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2-e*B*i^3/g^2/b/(1/(d*x+c)*a*e-1/
```

```
(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c^2+6*d^2*B*i^3/g^2/
b^3*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c*a-3*d*B*i^3/g^2/b^
2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d
)/b/e)*c^2+6*d^2*B*i^3/g^2/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a*c-2*d*e*B*i^3/g^2/b*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2-1/2*d*e^2*B*i^3/g^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^4/(d*x+
c)^2+1/2*d^3*e^2*B*i^3/g^2/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a
*d*e-1/(d*x+c)*b*c*e)^2*a^2-d^2*e*B*i^3/g^2/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*
c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a^2-d^2*e^2*A*i^3/g^2/b/(1/(d*
x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c+4*d^2*e*A*i^3/g^2/b^2/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)*a*c+2*d*e*B*i^3/g^2/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)*c*a-2*d^3*e*B*i^3/g^2/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*
d*e-1/(d*x+c)*b*c*e)*a^2+1/2*d*e^2*A*i^3/g^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c
*e)^2*c^2-3*d*B*i^3/g^2/b^2*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b
/e)*c^2+3*d*A*i^3/g^2/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c^2-3*d^3*B*i^3/g
^2/b^4*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2+3/2*d^3*B*i^3
/g^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^4*a^2-3*d^3*A*i^3/g^2/b^4*ln(-b*e+
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2+3/2*d*B*i^3/g^2*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)^2/b^2*c^2+5/2*d*B*i^3/g^2/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*d)*c^2-3*d*A*i^3/g^2/b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2+5/
2*d^3*B*i^3/g^2/b^4*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2-e*B*i^3/g^
2/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c^2-e*A*i^3/g^2/b/(1/(d*x+c)*a*
e-1/(d*x+c)*b*c/d*e+b/d*e)*c^2+3*d^3*A*i^3/g^2/b^4*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)*a^2+1/2*d*e*B*i^3/g^2/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2-2*d*e
*A*i^3/g^2/b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2-d^2*e*A*i^3/g^2/b^3/(1/(
d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a^2+1/2*d^3*e*B*i^3/g^2/b^3/(1/(d*x+c)*
a*d*e-1/(d*x+c)*b*c*e)*a^2-d^2*e*B*i^3/g^2/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c
/d*e+b/d*e)*a^2-1/2*d^5*e^2*B*i^3/g^2/b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(
1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4/(d*x+c)^2+2*d*e*B*i^3/g^2/b^2/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a*c-d^2*e
^2*B*i^3/g^2/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b
*c*e)^2*c*a+2*d*e*B*i^3/g^2/b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*
d*e-1/(d*x+c)*b*c*e)*c^3/(d*x+c)+4*d^2*e*B*i^3/g^2/b^2*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*c-2*d^4*e*B*i^3/g^2/b^4*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3/(d*x+c)-
d^2*e*B*i^3/g^2/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c*a+2*d*e*A*i^3/g^2/b
^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a*c
```

maxima [B] time = 1.84, size = 1501, normalized size = 4.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2,x, algor
ithm="maxima")
```

```
[Out] -3*A*(a^2/(b^4*g^2*x + a*b^3*g^2) - x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g^2
))*c*d^2*i^3 + 1/2*(2*a^3/(b^5*g^2*x + a*b^4*g^2) + 6*a^2*log(b*x + a)/(b^4
*g^2) + (b*x^2 - 4*a*x)/(b^3*g^2))*A*d^3*i^3 + 3*A*c^2*d*i^3*(a/(b^3*g^2*x
+ a*b^2*g^2) + log(b*x + a)/(b^2*g^2)) - B*c^3*i^3*(log(b*e*x/(d*x + c) + a
*e/(d*x + c))/(b^2*g^2*x + a*b*g^2) + 1/(b^2*g^2*x + a*b*g^2) + d*log(b*x +
 a)/((b^2*c - a*b*d)*g^2) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2)) - A*c^3*i
^3/(b^2*g^2*x + a*b*g^2) - 1/2*(5*b^3*c^3*d*i^3 - 3*a*b^2*c^2*d^2*i^3 - 2*a
^2*b*c*d^3*i^3 + 2*a^3*d^4*i^3)*B*log(d*x + c)/(b^5*c*g^2 - a*b^4*d*g^2) +
1/2*((b^4*c*d^3*i^3*log(e) - a*b^3*d^4*i^3*log(e))*B*x^3 + ((6*i^3*log(e) -
 i^3)*b^4*c^2*d^2 - (9*i^3*log(e) - 2*i^3)*a*b^3*c*d^3 + (3*i^3*log(e) - i^
3)*a^2*b^2*d^4)*B*x^2 + ((6*i^3*log(e) - i^3)*a*b^3*c^2*d^2 - 2*(5*i^3*log(
e) - i^3)*a^2*b^2*c*d^3 + (4*i^3*log(e) - i^3)*a^3*b*d^4)*B*x + 3*((b^4*c^3
*d*i^3 - 3*a*b^3*c^2*d^2*i^3 + 3*a^2*b^2*c*d^3*i^3 - a^3*b*d^4*i^3)*B*x + (
```

```
a*b^3*c^3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 3*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*
B)*log(b*x + a)^2 + 2*(3*(i^3*log(e) + i^3)*a*b^3*c^3*d - 6*(i^3*log(e) + i
^3)*a^2*b^2*c^2*d^2 + 4*(i^3*log(e) + i^3)*a^3*b*c*d^3 - (i^3*log(e) + i^3)
*a^4*d^4)*B + ((b^4*c*d^3*i^3 - a*b^3*d^4*i^3)*B*x^3 + 3*(2*b^4*c^2*d^2*i^3
 - 3*a*b^3*c*d^3*i^3 + a^2*b^2*d^4*i^3)*B*x^2 + (6*b^4*c^3*d*i^3*log(e) - 1
8*(i^3*log(e) - i^3)*a*b^3*c^2*d^2 + 9*(2*i^3*log(e) - 3*i^3)*a^2*b^2*c*d^3
 - (6*i^3*log(e) - 11*i^3)*a^3*b*d^4)*B*x - (18*a^2*b^2*c^2*d^2*i^3*log(e)
- 6*(i^3*log(e) + i^3)*a*b^3*c^3*d - 9*(2*i^3*log(e) - i^3)*a^3*b*c*d^3 + (
6*i^3*log(e) - 5*i^3)*a^4*d^4)*B)*log(b*x + a) - ((b^4*c*d^3*i^3 - a*b^3*d^
4*i^3)*B*x^3 + 3*(2*b^4*c^2*d^2*i^3 - 3*a*b^3*c*d^3*i^3 + a^2*b^2*d^4*i^3)*
B*x^2 + 2*(3*a*b^3*c^2*d^2*i^3 - 5*a^2*b^2*c*d^3*i^3 + 2*a^3*b*d^4*i^3)*B*x
 + 2*(3*a*b^3*c^3*d*i^3 - 6*a^2*b^2*c^2*d^2*i^3 + 4*a^3*b*c*d^3*i^3 - a^4*d
^4*i^3)*B + 6*((b^4*c^3*d*i^3 - 3*a*b^3*c^2*d^2*i^3 + 3*a^2*b^2*c*d^3*i^3 -
 a^3*b*d^4*i^3)*B*x + (a*b^3*c^3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 3*a^3*b*c*
d^3*i^3 - a^4*d^4*i^3)*B)*log(b*x + a))*log(d*x + c))/(a*b^5*c*g^2 - a^2*b^
4*d*g^2 + (b^6*c*g^2 - a*b^5*d*g^2)*x) + 3*(b^2*c^2*d*i^3 - 2*a*b*c*d^2*i^3
 + a^2*d^3*i^3)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(
b*d*x + a*d)/(b*c - a*d)))*B/(b^4*g^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)}{\left(a\,g+b\,g\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2,
x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**2,x)
```

```
[Out] Timed out
```

3.26 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^3}\,dx$

Optimal. Leaf size=345

$$\frac{d^3i^3(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^3}-\frac{3d^2i^3(bc-ad)\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^3}-\frac{2di^3(c+dx)(bc-ad}{b^3g^3(}$$

```
[Out] -2*B*d*(-a*d+b*c)*i^3*(d*x+c)/b^3/g^3/(b*x+a)-1/4*B*(-a*d+b*c)*i^3*(d*x+c)^
2/b^2/g^3/(b*x+a)^2+d^3*i^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^4/g^3-2*d
*(-a*d+b*c)*i^3*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^3/g^3/(b*x+a)-1/2*(-a
*d+b*c)*i^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2/g^3/(b*x+a)^2-B*d^2*(
-a*d+b*c)*i^3*ln(d*x+c)/b^4/g^3-3*d^2*(-a*d+b*c)*i^3*(A+B*ln(e*(b*x+a)/(d*x
+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^3+3*B*d^2*(-a*d+b*c)*i^3*polylog(2,b*
(d*x+c)/d/(b*x+a))/b^4/g^3
```

Rubi [A] time = 0.72, antiderivative size = 442, normalized size of antiderivative = 1.28, number of steps used = 22, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3Bd^2i^3(bc-ad)\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^4g^3}+\frac{3d^2i^3(bc-ad)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^3}-\frac{3di^3(bc-ad)^2\left(B\log\right.}{b^4g^3(a+}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^3,
x]
```

```
[Out] (A*d^3*i^3*x)/(b^3*g^3) - (B*(b*c - a*d)^3*i^3)/(4*b^4*g^3*(a + b*x)^2) - (
5*B*d*(b*c - a*d)^2*i^3)/(2*b^4*g^3*(a + b*x)) - (5*B*d^2*(b*c - a*d)*i^3*L
og[a + b*x])/(2*b^4*g^3) - (3*B*d^2*(b*c - a*d)*i^3*Log[a + b*x]^2)/(2*b^4*
g^3) + (B*d^3*i^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(b^4*g^3) - ((b*c
 - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b^4*g^3*(a + b*x)^2)
 - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^4*g^3*(a
 + b*x)) + (3*d^2*(b*c - a*d)*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c
+ d*x)]))/(b^4*g^3) + (3*B*d^2*(b*c - a*d)*i^3*Log[c + d*x])/(2*b^4*g^3) +
(3*B*d^2*(b*c - a*d)*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*
g^3) + (3*B*d^2*(b*c - a*d)*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(
b^4*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(26c+26dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^3}\,dx = \int \left(\frac{17576d^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^3} + \frac{17576(bc-ad)^3\left(A+B\log\right.}{b^3g^3(a+bx)^3}\right.$$

$$= \frac{\left(17576d^3\right)\int\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{b^3g^3} + \frac{\left(52728d^2(bc-ad)\right)\int \frac{A+}{}}{b^3g^3}$$

$$= \frac{17576Ad^3x}{b^3g^3} - \frac{8788(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^3(a+bx)^2} - \frac{52728d(bc}{}$$

$$= \frac{17576Ad^3x}{b^3g^3} + \frac{17576Bd^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^4g^3} - \frac{8788(bc-ad)^3\left(\right.}{b^4g^3(}$$

$$= \frac{17576Ad^3x}{b^3g^3} + \frac{17576Bd^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^4g^3} - \frac{8788(bc-ad)^3\left(\right.}{b^4g^3(}$$

$$= \frac{17576Ad^3x}{b^3g^3} - \frac{4394B(bc-ad)^3}{b^4g^3(a+bx)^2} - \frac{43940Bd(bc-ad)^2}{b^4g^3(a+bx)} - \frac{43940Bd}{}$$

$$= \frac{17576Ad^3x}{b^3g^3} - \frac{4394B(bc-ad)^3}{b^4g^3(a+bx)^2} - \frac{43940Bd(bc-ad)^2}{b^4g^3(a+bx)} - \frac{43940Bd}{}$$

$$= \frac{17576Ad^3x}{b^3g^3} - \frac{4394B(bc-ad)^3}{b^4g^3(a+bx)^2} - \frac{43940Bd(bc-ad)^2}{b^4g^3(a+bx)} - \frac{43940Bd}{}$$

$$= \frac{17576Ad^3x}{b^3g^3} - \frac{4394B(bc-ad)^3}{b^4g^3(a+bx)^2} - \frac{43940Bd(bc-ad)^2}{b^4g^3(a+bx)} - \frac{43940Bd}{}$$

Mathematica [A] time = 0.41, size = 314, normalized size = 0.91

$$i^3\left(12d^2(bc-ad)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) - \frac{12d(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{a+bx} - \frac{2(bc-ad)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{(a+bx)^2} + 4Bd\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x)^3,x]
```

```
[Out] (i^3*(4*A*b*d^3*x - (B*(b*c - a*d)^3)/(a + b*x)^2 - (10*B*d*(b*c - a*d)^2)/
(a + b*x) + 10*B*d^2*(-(b*c) + a*d)*Log[a + b*x] + 4*B*d^3*(a + b*x)*Log[(e
```

```
*(a + b*x))/(c + d*x)] - (2*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x
)]))/(a + b*x)^2 - (12*d*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])
)/(a + b*x) + 12*d^2*(b*c - a*d)*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c +
 d*x)]) + 6*B*d^2*(b*c - a*d)*Log[c + d*x] + 6*B*d^2*(-(b*c) + a*d)*(Log[a
+ b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*
(a + b*x))/(-(b*c) + a*d)])))/(4*b^4*g^3)
```

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^3i^3x^3 + 3\,Acd^2i^3x^2 + 3\,Ac^2di^3x + Ac^3i^3 + \left(Bd^3i^3x^3 + 3\,Bcd^2i^3x^2 + 3\,Bc^2di^3x + Bc^3i^3\right)\log\left(\frac{bex+ae}{dx+c}\right)}{b^3g^3x^3 + 3\,ab^2g^3x^2 + 3\,a^2bg^3x + a^3g^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algor
ithm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 +
 (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log((b*e
*x + a*e)/(d*x + c)))/(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*
g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.14, size = 1855, normalized size = 5.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3,x)
```

```
[Out] -2*d^3*e*i^3/g^3*B/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(
d*x+c)*b*c*e)/(d*x+c)*a*c+d^2*e*i^3/g^3*B/b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*c^2-1/4*e^2*i^3/g^3*B/b/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+d^2*i^3/g^3*B/b^3*ln(-b*e+(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)*d)*c+3*d^3*i^3/g^3*B/b^4*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*d)/b/e)*a-3*d^3*i^3/g^3*A/b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a
+3*d^2*i^3/g^3*A/b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^3*i^3/g^3*B/b^4*ln
(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+3*d^3*i^3/g^3*A/b^4*ln(-b*e+(b/d*e
+(a*d-b*c)/(d*x+c)/d*e)*d)*a-3*d^2*i^3/g^3*A/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*d)*c+d^4*e*i^3/g^3*B/b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*
x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a^2+1/2*d*e^2*i^3/g^3*A/b^2/(1/(d*x+c)*
a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+1/4*d*e^2*i^3/g^3*B/b^2/(1/(d*x+c)*a*e-1/(
d*x+c)*b*c/d*e+b/d*e)^2*a-d^2*e*i^3/g^3*A/b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*
c*e)*c+2*d^2*e*i^3/g^3*A/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-2*d*
e*i^3/g^3*A/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+2*d^2*e*i^3/g^3*B
/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-2*d*e*i^3/g^3*B/b^2/(1/(d*x+
c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+d^3*e*i^3/g^3*A/b^3/(1/(d*x+c)*a*d*e-1/(d
*x+c)*b*c*e)*a+3*d^3*i^3/g^3*B/b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*
e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a-3*d^2*i^3/g^3*B/b^3*ln(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c-1/2*e^
```

```
2*i^3/g^3*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)*c+2*d^2*e*i^3/g^3*B/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d^3*e*i^3/g^3*B/b^3*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a-1/2*e^2*i^3/g^3*A/b/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-2*d*e*i^3/g^3*B/b^2/(1/(d*x+c)*a*e-1/
(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^2*e*i^3/g^3*B/b^
2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c+1/2*d
*e^2*i^3/g^3*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)*a-3*d^2*i^3/g^3*B/b^3*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)*d)/b/e)*c-3/2*d^3*i^3/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^4*a
+3/2*d^2*i^3/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/b^3*c
```

maxima [B] time = 2.51, size = 2302, normalized size = 6.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3,x, algor
ithm="maxima")
```

```
[Out] -3/4*B*c^2*d*i^3*(2*(2*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4*g
^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + (3*a*b*c - a^2*d + 2*(2*b^2*c - a*b
*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^
3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*b^
3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c^2 - 2*
a*b^3*c*d + a^2*b^2*d^2)*g^3)) - 1/2*A*d^3*i^3*((6*a^2*b*x + 5*a^3)/(b^6*g^
3*x^2 + 2*a*b^5*g^3*x + a^2*b^4*g^3) - 2*x/(b^3*g^3) + 6*a*log(b*x + a)/(b^
4*g^3)) + 3/2*A*c*d^2*i^3*((4*a*b*x + 3*a^2)/(b^5*g^3*x^2 + 2*a*b^4*g^3*x +
 a^2*b^3*g^3) + 2*log(b*x + a)/(b^3*g^3)) + 1/4*B*c^3*i^3*((2*b*d*x - b*c +
 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b
^2*c - a^3*b*d)*g^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^3*g^3*x^2
+ 2*a*b^2*g^3*x + a^2*b*g^3) + 2*d^2*log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d +
 a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*
g^3)) - 3/2*(2*b*x + a)*A*c^2*d*i^3/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*
g^3) - 1/2*A*c^3*i^3/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*(2*b^3
*c^3*d^2*i^3 + 8*a*b^2*c^2*d^3*i^3 - 13*a^2*b*c*d^4*i^3 + 5*a^3*d^5*i^3)*B*
log(d*x + c)/(b^6*c^2*g^3 - 2*a*b^5*c*d*g^3 + a^2*b^4*d^2*g^3) + 1/4*(4*(b^
5*c^2*d^3*i^3*log(e) - 2*a*b^4*c*d^4*i^3*log(e) + a^2*b^3*d^5*i^3*log(e))*B
*x^3 + 8*(a*b^4*c^2*d^3*i^3*log(e) - 2*a^2*b^3*c*d^4*i^3*log(e) + a^3*b^2*d
^5*i^3*log(e))*B*x^2 + 2*(12*(i^3*log(e) + i^3)*a*b^4*c^3*d^2 - (28*i^3*log
(e) + 27*i^3)*a^2*b^3*c^2*d^3 + 20*(i^3*log(e) + i^3)*a^3*b^2*c*d^4 - (4*i^
3*log(e) + 5*i^3)*a^4*b*d^5)*B*x + 6*((b^5*c^3*d^2*i^3 - 3*a*b^4*c^2*d^3*i^
3 + 3*a^2*b^3*c*d^4*i^3 - a^3*b^2*d^5*i^3)*B*x^2 + 2*(a*b^4*c^3*d^2*i^3 - 3
*a^2*b^3*c^2*d^3*i^3 + 3*a^3*b^2*c*d^4*i^3 - a^4*b*d^5*i^3)*B*x + (a^2*b^3*
c^3*d^2*i^3 - 3*a^3*b^2*c^2*d^3*i^3 + 3*a^4*b*c*d^4*i^3 - a^5*d^5*i^3)*B)*l
og(b*x + a)^2 + (3*(6*i^3*log(e) + 7*i^3)*a^2*b^3*c^3*d^2 - (46*i^3*log(e)
+ 47*i^3)*a^3*b^2*c^2*d^3 + (38*i^3*log(e) + 35*i^3)*a^4*b*c*d^4 - (10*i^3*
log(e) + 9*i^3)*a^5*d^5)*B + 2*(2*(b^5*c^2*d^3*i^3 - 2*a*b^4*c*d^4*i^3 + a^
2*b^3*d^5*i^3)*B*x^3 + (6*b^5*c^3*d^2*i^3*log(e) - 18*(i^3*log(e) - i^3)*a*
b^4*c^2*d^3 + 9*(2*i^3*log(e) - 3*i^3)*a^2*b^3*c*d^4 - (6*i^3*log(e) - 11*i
^3)*a^3*b^2*d^5)*B*x^2 - 2*(18*a^2*b^3*c^2*d^3*i^3*log(e) - 6*(i^3*log(e) +
 i^3)*a*b^4*c^3*d^2 - 9*(2*i^3*log(e) - i^3)*a^3*b^2*c*d^4 + (6*i^3*log(e)
- 5*i^3)*a^4*b*d^5)*B*x + (18*a^4*b*c*d^4*i^3*log(e) + 3*(2*i^3*log(e) + 3*
i^3)*a^2*b^3*c^3*d^2 - 9*(2*i^3*log(e) + i^3)*a^3*b^2*c^2*d^3 - 2*(3*i^3*lo
g(e) - i^3)*a^5*d^5)*B)*log(b*x + a) - 2*(2*(b^5*c^2*d^3*i^3 - 2*a*b^4*c*d^
4*i^3 + a^2*b^3*d^5*i^3)*B*x^3 + 4*(a*b^4*c^2*d^3*i^3 - 2*a^2*b^3*c*d^4*i^3
 + a^3*b^2*d^5*i^3)*B*x^2 + 4*(3*a*b^4*c^3*d^2*i^3 - 7*a^2*b^3*c^2*d^3*i^3
+ 5*a^3*b^2*c*d^4*i^3 - a^4*b*d^5*i^3)*B*x + (9*a^2*b^3*c^3*d^2*i^3 - 23*a^
3*b^2*c^2*d^3*i^3 + 19*a^4*b*c*d^4*i^3 - 5*a^5*d^5*i^3)*B + 6*((b^5*c^3*d^2
*i^3 - 3*a*b^4*c^2*d^3*i^3 + 3*a^2*b^3*c*d^4*i^3 - a^3*b^2*d^5*i^3)*B*x^2 +
```

```
 2*(a*b^4*c^3*d^2*i^3 - 3*a^2*b^3*c^2*d^3*i^3 + 3*a^3*b^2*c*d^4*i^3 - a^4*b
*d^5*i^3)*B*x + (a^2*b^3*c^3*d^2*i^3 - 3*a^3*b^2*c^2*d^3*i^3 + 3*a^4*b*c*d^
4*i^3 - a^5*d^5*i^3)*B)*log(b*x + a))*log(d*x + c))/(a^2*b^6*c^2*g^3 - 2*a^
3*b^5*c*d*g^3 + a^4*b^4*d^2*g^3 + (b^8*c^2*g^3 - 2*a*b^7*c*d*g^3 + a^2*b^6*
d^2*g^3)*x^2 + 2*(a*b^7*c^2*g^3 - 2*a^2*b^6*c*d*g^3 + a^3*b^5*d^2*g^3)*x) +
 3*(b*c*d^2*i^3 - a*d^3*i^3)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) +
1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^4*g^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)}{\left(a\,g+b\,g\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^3,
x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^3,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3,x)
```

```
[Out] Timed out
```

3.27 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^4}\,dx$

Optimal. Leaf size=310

$$-\frac{d^3i^3\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^4}-\frac{d^2i^3(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^4(a+bx)}-\frac{di^3(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)\right.}{2b^2g^4(a+bx)^2}$$

```
[Out] -B*d^2*i^3*(d*x+c)/b^3/g^4/(b*x+a)-1/4*B*d*i^3*(d*x+c)^2/b^2/g^4/(b*x+a)^2-
1/9*B*i^3*(d*x+c)^3/b/g^4/(b*x+a)^3-d^2*i^3*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+
c)))/b^3/g^4/(b*x+a)-1/2*d*i^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2/g^
4/(b*x+a)^2-1/3*i^3*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/b/g^4/(b*x+a)^3-d
^3*i^3*(A+B*ln(e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^4+B*d^3*
i^3*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^4
```

Rubi [A] time = 0.78, antiderivative size = 424, normalized size of antiderivative = 1.37, number of steps used = 23, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^3i^3\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^4g^4}+\frac{d^3i^3\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^4}-\frac{3d^2i^3(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^4(a+bx)}-\frac{3di}{}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^4,
x]
```

```
[Out] -(B*(b*c - a*d)^3*i^3)/(9*b^4*g^4*(a + b*x)^3) - (7*B*d*(b*c - a*d)^2*i^3)/
(12*b^4*g^4*(a + b*x)^2) - (11*B*d^2*(b*c - a*d)*i^3)/(6*b^4*g^4*(a + b*x))
 - (11*B*d^3*i^3*Log[a + b*x])/(6*b^4*g^4) - (B*d^3*i^3*Log[a + b*x]^2)/(2*
b^4*g^4) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^4*
g^4*(a + b*x)^3) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x
)]))/(2*b^4*g^4*(a + b*x)^2) - (3*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*
x))/(c + d*x)]))/(b^4*g^4*(a + b*x)) + (d^3*i^3*Log[a + b*x]*(A + B*Log[(e*
(a + b*x))/(c + d*x)]))/(b^4*g^4) + (11*B*d^3*i^3*Log[c + d*x])/(6*b^4*g^4)
 + (B*d^3*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g^4) + (B*d
^3*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(27c+27dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^4}\,dx = \int\left(\frac{19683(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^4(a+bx)^4}+\frac{59049d(bc-ad)^2\left(A\right.}{b^3g^4(a\right.$$

$$=\frac{(19683d^3)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}dx}{b^3g^4}+\frac{(59049d^2(bc-ad))\int\frac{A+B\log\left(\frac{e(a}{c}\right.}{(a+bx)^2}}{b^3g^4}$$

$$=-\frac{6561(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^4(a+bx)^3}-\frac{59049d(bc-ad)^2\left(A+\right.}{2b^4g^4(a+b}$$

$$=-\frac{6561(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^4(a+bx)^3}-\frac{59049d(bc-ad)^2\left(A+\right.}{2b^4g^4(a+b}$$

$$=-\frac{6561(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^4(a+bx)^3}-\frac{59049d(bc-ad)^2\left(A+\right.}{2b^4g^4(a+b}$$

$$=-\frac{2187B(bc-ad)^3}{b^4g^4(a+bx)^3}-\frac{45927Bd(bc-ad)^2}{4b^4g^4(a+bx)^2}-\frac{72171Bd^2(bc-ad)}{2b^4g^4(a+bx)}-$$

$$=-\frac{2187B(bc-ad)^3}{b^4g^4(a+bx)^3}-\frac{45927Bd(bc-ad)^2}{4b^4g^4(a+bx)^2}-\frac{72171Bd^2(bc-ad)}{2b^4g^4(a+bx)}-$$

$$=-\frac{2187B(bc-ad)^3}{b^4g^4(a+bx)^3}-\frac{45927Bd(bc-ad)^2}{4b^4g^4(a+bx)^2}-\frac{72171Bd^2(bc-ad)}{2b^4g^4(a+bx)}-$$

$$=-\frac{2187B(bc-ad)^3}{b^4g^4(a+bx)^3}-\frac{45927Bd(bc-ad)^2}{4b^4g^4(a+bx)^2}-\frac{72171Bd^2(bc-ad)}{2b^4g^4(a+bx)}-$$

Mathematica [A] time = 0.45, size = 308, normalized size = 0.99

$$\frac{i^3\left(36d^3\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+\frac{108d^2(ad-bc)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{a+bx}-\frac{54d(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{(a+bx)^2}-\frac{12(bc-ad)^3\left(B\right.}{(a}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x)^4,x]
```

```
[Out] (i^3*((-4*B*(b*c - a*d)^3)/(a + b*x)^3 - (21*B*d*(b*c - a*d)^2)/(a + b*x)^2
 + (66*B*d^2*(-(b*c) + a*d))/(a + b*x) - 66*B*d^3*Log[a + b*x] - (12*(b*c -
 a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x)^3 - (54*d*(b*c - a*
d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x)^2 + (108*d^2*(-(b*c) +
 a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x) + 36*d^3*Log[a + b*x]
*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 66*B*d^3*Log[c + d*x] - 18*B*d^3*(L
og[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2
, (d*(a + b*x))/(-(b*c) + a*d)])))/(36*b^4*g^4)
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^3i^3x^3+3\,Acd^2i^3x^2+3\,Ac^2di^3x+Ac^3i^3+\left(Bd^3i^3x^3+3\,Bcd^2i^3x^2+3\,Bc^2di^3x+Bc^3i^3\right)\log\left(\frac{bex+ae}{dx+c}\right.}{b^4g^4x^4+4\,ab^3g^4x^3+6\,a^2b^2g^4x^2+4\,a^3bg^4x+a^4g^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algor
ithm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 +
 (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log((b*e
*x + a*e)/(d*x + c)))/(b^4*g^4*x^4 + 4*a*b^3*g^4*x^3 + 6*a^2*b^2*g^4*x^2 +
4*a^3*b*g^4*x + a^4*g^4), x)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.07, size = 1929, normalized size = 6.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4,x)
```

```
[Out] -1/4*d^2*e^2*i^3/(a*d-b*c)/g^4*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^2*a+1/9*e^3*i^3/(a*d-b*c)/g^4*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3
*c+1/3*e^3*i^3/(a*d-b*c)/g^4*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c-
1/2*d^2*e^2*i^3/(a*d-b*c)/g^4*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/2*d*e^2*i^3/(a*d-b*c)/g^4*B/b/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/3*d
*e^3*i^3/(a*d-b*c)/g^4*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/3*e^3*i^3/(a*d-b*c)/g^4*B/(1/(d*x+c)*a*e-1/(d
*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^4*i^3/(a*d-b*c)/
g^4*A/b^4*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+d^3*i^3/(a*d-b*c)/g^4*
A/b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c+d^4*i^3/(a*d-b*c)/g^4*A/b^
4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/2*d^4*i^3/(a*d-b*c)/g^4*B*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)^2/b^4*a-d^3*i^3/(a*d-b*c)/g^4*A/b^3*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)*c-d^4*i^3/(a*d-b*c)/g^4*B/b^4*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*d)/b/e)*a-1/2*d^3*i^3/(a*d-b*c)/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)^2/b^3*c+d^3*i^3/(a*d-b*c)/g^4*B/b^3*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d
*x+c)/d*e)*d)/b/e)*c-1/2*d^2*e^2*i^3/(a*d-b*c)/g^4*A/b^2/(1/(d*x+c)*a*e-1/(
d*x+c)*b*c/d*e+b/d*e)^2*a-d^3*e*i^3/(a*d-b*c)/g^4*B/b^3/(1/(d*x+c)*a*e-1/(d
*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d^2*e*i^3/(a*d-b*c)/
g^4*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*c-1/3*d*e^3*i^3/(a*d-b*c)/g^4*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b
/d*e)^3*a-d^4*i^3/(a*d-b*c)/g^4*B/b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(
-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+d^3*i^3/(a*d-b*c)/g^4*B/b^3*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/
e)*c+1/4*d*e^2*i^3/(a*d-b*c)/g^4*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^2*c-1/9*d*e^3*i^3/(a*d-b*c)/g^4*B/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)^3*a-d^3*e*i^3/(a*d-b*c)/g^4*A/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)*a+d^2*e*i^3/(a*d-b*c)/g^4*A/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c
-d^3*e*i^3/(a*d-b*c)/g^4*B/b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+d^
2*e*i^3/(a*d-b*c)/g^4*B/b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+1/2*d
*e^2*i^3/(a*d-b*c)/g^4*A/b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4,x, algor
ithm="maxima")
```

```
[Out] -1/6*B*d^3*i^3*((18*a*b^2*x^2 + 27*a^2*b*x + 11*a^3 + 6*(b^3*x^3 + 3*a*b^2*
x^2 + 3*a^2*b*x + a^3)*log(b*x + a))*log(d*x + c)/(b^7*g^4*x^3 + 3*a*b^6*g^
4*x^2 + 3*a^2*b^5*g^4*x + a^3*b^4*g^4) - 6*integrate(1/6*(6*b^4*d*x^4*log(e
) + 45*a^2*b^2*d*x^2 + 38*a^3*b*d*x + 11*a^4*d + 6*(b^4*c*log(e) + 3*a*b^3*
d)*x^3 + 6*(2*b^4*d*x^4 + 6*a^2*b^2*d*x^2 + 4*a^3*b*d*x + a^4*d + (b^4*c +
4*a*b^3*d)*x^3)*log(b*x + a))/(b^8*d*g^4*x^5 + a^4*b^4*c*g^4 + (b^8*c*g^4 +
 4*a*b^7*d*g^4)*x^4 + 2*(2*a*b^7*c*g^4 + 3*a^2*b^6*d*g^4)*x^3 + 2*(3*a^2*b^
6*c*g^4 + 2*a^3*b^5*d*g^4)*x^2 + (4*a^3*b^5*c*g^4 + a^4*b^4*d*g^4)*x), x))
- 1/6*B*c*d^2*i^3*(6*(3*b^2*x^2 + 3*a*b*x + a^2)*log(b*e*x/(d*x + c) + a*e/
(d*x + c))/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4)
+ (11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2 + 6*(3*b^4*c^2 - 3*a*b^3*c*d +
a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^2*c*d + 2*a^3*b*d^2)*x)/((b^8*c
^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*(a*b^7*c^2 - 2*a^2*b^6*c*d + a^
3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4*b^4*d^2)*g^4*x +
(a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*g^4) + 6*(3*b^2*c^2*d - 3*a*b*c
*d^2 + a^2*d^3)*log(b*x + a)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 -
a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(d*x + c)/((
b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4)) - 1/12*B*c^2
*d*i^3*(6*(3*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^4*x^3 + 3
*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) + (5*a*b^2*c^2 - 22*a^2*b*c
*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*
d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b
^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*
c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4)
 - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3
*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 -
 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4)) - 1/18*B*c^3*i^3*((6*
b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*
x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^
4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2
)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*log(b*e*x/(d*x
 + c) + a*e/(d*x + c))/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a
^3*b*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2
- a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^
2*c*d^2 - a^3*b*d^3)*g^4)) + 1/6*A*d^3*i^3*((18*a*b^2*x^2 + 27*a^2*b*x + 11
*a^3)/(b^7*g^4*x^3 + 3*a*b^6*g^4*x^2 + 3*a^2*b^5*g^4*x + a^3*b^4*g^4) + 6*l
og(b*x + a)/(b^4*g^4)) - 1/2*(3*b*x + a)*A*c^2*d*i^3/(b^5*g^4*x^3 + 3*a*b^4
*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - (3*b^2*x^2 + 3*a*b*x + a^2)*A*c
*d^2*i^3/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) -
1/3*A*c^3*i^3/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)}{\left(a\,g+b\,g\,x\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^4,
x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^4,
 x)
```

<u>**sympy**</u> **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4,x)
[Out] Timed out
```

3.28 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^5}\,dx$

Optimal. Leaf size=89

$$-\frac{i^3(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4g^5(a+bx)^4(bc-ad)}-\frac{Bi^3(c+dx)^4}{16g^5(a+bx)^4(bc-ad)}$$

```
[Out] -1/16*B*i^3*(d*x+c)^4/(-a*d+b*c)/g^5/(b*x+a)^4-1/4*i^3*(d*x+c)^4*(A+B*ln(e*
(b*x+a)/(d*x+c)))/(-a*d+b*c)/g^5/(b*x+a)^4
```

Rubi [B] time = 0.72, antiderivative size = 373, normalized size of antiderivative = 4.19, number of steps used = 18, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2528, 2525, 12, 44}

$$-\frac{d^3i^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^5(a+bx)}-\frac{3d^2i^3(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^4g^5(a+bx)^2}-\frac{di^3(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^5(a+bx)^3}-\frac{i^3(bc-$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^5,
x]
```

```
[Out] -(B*(b*c - a*d)^3*i^3)/(16*b^4*g^5*(a + b*x)^4) - (B*d*(b*c - a*d)^2*i^3)/(
4*b^4*g^5*(a + b*x)^3) - (3*B*d^2*(b*c - a*d)*i^3)/(8*b^4*g^5*(a + b*x)^2)
- (B*d^3*i^3)/(4*b^4*g^5*(a + b*x)) - (B*d^4*i^3*Log[a + b*x])/(4*b^4*(b*c
- a*d)*g^5) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(4*b
^4*g^5*(a + b*x)^4) - (d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*
x)]))/(b^4*g^5*(a + b*x)^3) - (3*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(2*b^4*g^5*(a + b*x)^2) - (d^3*i^3*(A + B*Log[(e*(a + b*x))
/(c + d*x)]))/(b^4*g^5*(a + b*x)) + (B*d^4*i^3*Log[c + d*x])/(4*b^4*(b*c -
a*d)*g^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
```

```
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(28c+28dx)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^5}\,dx = \int \left(\frac{21952(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^5(a+bx)^5} + \frac{65856d(bc-ad)^2 \left(A+\right.}{b^3g^5(a+b}\right.$$

$$= \frac{\left(21952d^3\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2}\,dx}{b^3g^5} + \frac{\left(65856d^2(bc-ad)\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right.}{(a+bx)^3}}{b^3g^5}$$

$$= -\frac{5488(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^5(a+bx)^4} - \frac{21952d(bc-ad)^2\left(A+B\,\mathrm{lo}\right.}{b^4g^5(a+bx)^3}$$

$$= -\frac{5488(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^5(a+bx)^4} - \frac{21952d(bc-ad)^2\left(A+B\,\mathrm{lo}\right.}{b^4g^5(a+bx)^3}$$

$$= -\frac{5488(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^5(a+bx)^4} - \frac{21952d(bc-ad)^2\left(A+B\,\mathrm{lo}\right.}{b^4g^5(a+bx)^3}$$

$$= -\frac{1372B(bc-ad)^3}{b^4g^5(a+bx)^4} - \frac{5488Bd(bc-ad)^2}{b^4g^5(a+bx)^3} - \frac{8232Bd^2(bc-ad)}{b^4g^5(a+bx)^2} - \frac{548}{b^4g^5(}$$

Mathematica [B] time = 0.49, size = 427, normalized size = 4.80

$$-\frac{i^3\left(-4a^4Ad^4-4a^4Bd^4\log(c+dx)-a^4Bd^4-16a^3Abd^4x-16a^3bBd^4x\log(c+dx)-4a^3bBd^4x-24a^2Ab^2d^4x^2-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x)^5,x]
```

```
[Out] -1/16*(i^3*(4*A*b^4*c^4 + b^4*B*c^4 - 4*a^4*A*d^4 - a^4*B*d^4 + 16*A*b^4*c^
3*d*x + 4*b^4*B*c^3*d*x - 16*a^3*A*b*d^4*x - 4*a^3*b*B*d^4*x + 24*A*b^4*c^2
*d^2*x^2 + 6*b^4*B*c^2*d^2*x^2 - 24*a^2*A*b^2*d^4*x^2 - 6*a^2*b^2*B*d^4*x^2
 + 16*A*b^4*c*d^3*x^3 + 4*b^4*B*c*d^3*x^3 - 16*a*A*b^3*d^4*x^3 - 4*a*b^3*B*
d^4*x^3 + 4*B*d^4*(a + b*x)^4*Log[a + b*x] + 4*B*(-(a^4*d^4) - 4*a^3*b*d^4*
x - 6*a^2*b^2*d^4*x^2 - 4*a*b^3*d^4*x^3 + b^4*c*(c^3 + 4*c^2*d*x + 6*c*d^2*
x^2 + 4*d^3*x^3))*Log[(e*(a + b*x))/(c + d*x)] - 4*a^4*B*d^4*Log[c + d*x] -
 16*a^3*b*B*d^4*x*Log[c + d*x] - 24*a^2*b^2*B*d^4*x^2*Log[c + d*x] - 16*a*b
^3*B*d^4*x^3*Log[c + d*x] - 4*b^4*B*d^4*x^4*Log[c + d*x]))/(b^4*(b*c - a*d)
*g^5*(a + b*x)^4)
```

fricas [B] time = 0.86, size = 355, normalized size = 3.99

$$-\frac{4\left(\left((4A+B)b^4cd^3-(4A+B)ab^3d^4\right)i^3x^3+6\left((4A+B)b^4c^2d^2-(4A+B)a^2b^2d^4\right)i^3x^2+4\left((4A+B)b^4c^3d-(4\right.\right.}{16\left(\left(b^9c-ab^8d\right)g^5x^4+4\left(ab^8c-a^2b^7d\right)g^5x^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algor
ithm="fricas")
```

```
[Out] -1/16*(4*((4*A + B)*b^4*c*d^3 - (4*A + B)*a*b^3*d^4)*i^3*x^3 + 6*((4*A + B)
*b^4*c^2*d^2 - (4*A + B)*a^2*b^2*d^4)*i^3*x^2 + 4*((4*A + B)*b^4*c^3*d - (4
*A + B)*a^3*b*d^4)*i^3*x + ((4*A + B)*b^4*c^4 - (4*A + B)*a^4*d^4)*i^3 + 4*
(B*b^4*d^4*i^3*x^4 + 4*B*b^4*c*d^3*i^3*x^3 + 6*B*b^4*c^2*d^2*i^3*x^2 + 4*B*
b^4*c^3*d*i^3*x + B*b^4*c^4*i^3)*log((b*e*x + a*e)/(d*x + c)))/((b^9*c - a*
b^8*d)*g^5*x^4 + 4*(a*b^8*c - a^2*b^7*d)*g^5*x^3 + 6*(a^2*b^7*c - a^3*b^6*d
)*g^5*x^2 + 4*(a^3*b^6*c - a^4*b^5*d)*g^5*x + (a^4*b^5*c - a^5*b^4*d)*g^5)
```

giac [A] time = 3.27, size = 117, normalized size = 1.31

$$\frac{\left(4\,Bie^{5}\log\left(\frac{bxe+ae}{dx+c}\right)+4\,Aie^{5}+Bie^{5}\right)(dx+c)^{4}\left(\frac{bc}{(bce-ade)(bc-ad)}-\frac{ad}{(bce-ade)(bc-ad)}\right)}{16\,(bxe+ae)^{4}g^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algor
ithm="giac")
```

```
[Out] 1/16*(4*B*i*e^5*log((b*x*e + a*e)/(d*x + c)) + 4*A*i*e^5 + B*i*e^5)*(d*x +
c)^4*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d))
)/((b*x*e + a*e)^4*g^5)
```

maple [B] time = 0.05, size = 406, normalized size = 4.56

$$\frac{Bad\,e^{4}i^{3}\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{4\,(ad-bc)^{2}\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^{4}g^{5}}-\frac{Bbc\,e^{4}i^{3}\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{4\,(ad-bc)^{2}\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^{4}g^{5}}+\frac{Aad\,e^{4}i^{3}}{4\,(ad-bc)^{2}\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^5,x)
```

```
[Out] 1/4*d*e^4*i^3/(a*d-b*c)^2/g^5*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a
-1/4*e^4*i^3/(a*d-b*c)^2/g^5*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*
c+1/4*d*e^4*i^3/(a*d-b*c)^2/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/4*e^4*i^3/(a*d-b*c)^2/g^5*B/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/16*d*
e^4*i^3/(a*d-b*c)^2/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/16*
e^4*i^3/(a*d-b*c)^2/g^5*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c
```

maxima [B] time = 2.71, size = 3107, normalized size = 34.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^5,x, algor
ithm="maxima")
```

```
[Out] -1/48*B*d^3*i^3*(12*(4*b^3*x^3 + 6*a*b^2*x^2 + 4*a^2*b*x + a^3)*log(b*e*x/(
d*x + c) + a*e/(d*x + c))/(b^8*g^5*x^4 + 4*a*b^7*g^5*x^3 + 6*a^2*b^6*g^5*x^
2 + 4*a^3*b^5*g^5*x + a^4*b^4*g^5) + (25*a^3*b^3*c^3 - 23*a^4*b^2*c^2*d + 1
3*a^5*b*c*d^2 - 3*a^6*d^3 + 12*(4*b^6*c^3 - 6*a*b^5*c^2*d + 4*a^2*b^4*c*d^2
 - a^3*b^3*d^3)*x^3 + 6*(18*a*b^5*c^3 - 22*a^2*b^4*c^2*d + 13*a^3*b^3*c*d^2
 - 3*a^4*b^2*d^3)*x^2 + 4*(22*a^2*b^4*c^3 - 23*a^3*b^3*c^2*d + 13*a^4*b^2*c
*d^2 - 3*a^5*b*d^3)*x)/((b^11*c^3 - 3*a*b^10*c^2*d + 3*a^2*b^9*c*d^2 - a^3*
b^8*d^3)*g^5*x^4 + 4*(a*b^10*c^3 - 3*a^2*b^9*c^2*d + 3*a^3*b^8*c*d^2 - a^4*
b^7*d^3)*g^5*x^3 + 6*(a^2*b^9*c^3 - 3*a^3*b^8*c^2*d + 3*a^4*b^7*c*d^2 - a^5
*b^6*d^3)*g^5*x^2 + 4*(a^3*b^8*c^3 - 3*a^4*b^7*c^2*d + 3*a^5*b^6*c*d^2 - a^
6*b^5*d^3)*g^5*x + (a^4*b^7*c^3 - 3*a^5*b^6*c^2*d + 3*a^6*b^5*c*d^2 - a^7*b
```

```
^4*d^3)*g^5) + 12*(4*b^3*c^3*d - 6*a*b^2*c^2*d^2 + 4*a^2*b*c*d^3 - a^3*d^4)
*log(b*x + a)/((b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*c^2*d^2 - 4*a^3*b^5*c*d
^3 + a^4*b^4*d^4)*g^5) - 12*(4*b^3*c^3*d - 6*a*b^2*c^2*d^2 + 4*a^2*b*c*d^3
- a^3*d^4)*log(d*x + c)/((b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*c^2*d^2 - 4*a
^3*b^5*c*d^3 + a^4*b^4*d^4)*g^5)) - 1/48*B*c*d^2*i^3*(12*(6*b^2*x^2 + 4*a*b
*x + a^2)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^7*g^5*x^4 + 4*a*b^6*g^5*x
^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) + (13*a^2*b^3*c^3 -
 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7*a^5*d^3 - 12*(6*b^5*c^2*d - 4*a*b^4*
c*d^2 + a^2*b^3*d^3)*x^3 + 6*(6*b^5*c^3 - 46*a*b^4*c^2*d + 29*a^2*b^3*c*d^2
 - 7*a^3*b^2*d^3)*x^2 + 4*(10*a*b^4*c^3 - 63*a^2*b^3*c^2*d + 33*a^3*b^2*c*d
^2 - 7*a^4*b*d^3)*x)/((b^10*c^3 - 3*a*b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7
*d^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2*b^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*
d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^3*b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5
*d^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a^4*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^
4*d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*b^5*c^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d
^3)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*log(b*x + a)/((b^7*c^
4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5)
 + 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*log(d*x + c)/((b^7*c^4 - 4*a*
b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5)) - 1/48
*B*c^2*d*i^3*(12*(4*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^5*
x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5)
+ (7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4
*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*
x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/(
(b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^
8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b
^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*
b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5
*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^
3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a
^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^
6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*
g^5)) + 1/48*B*c^3*i^3*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a
^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d -
5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^
2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2
 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^
2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d
^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2
- a^7*b*d^3)*g^5) - 12*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^5*x^4 +
4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) + 12*d^4
*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d
^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^
2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5)) - 1/4*(4*b*x + a)*A*c^2*
d*i^3/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x
+ a^4*b^2*g^5) - 1/4*(6*b^2*x^2 + 4*a*b*x + a^2)*A*c*d^2*i^3/(b^7*g^5*x^4 +
 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/4
*(4*b^3*x^3 + 6*a*b^2*x^2 + 4*a^2*b*x + a^3)*A*d^3*i^3/(b^8*g^5*x^4 + 4*a*b
^7*g^5*x^3 + 6*a^2*b^6*g^5*x^2 + 4*a^3*b^5*g^5*x + a^4*b^4*g^5) - 1/4*A*c^3
*i^3/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x +
 a^4*b*g^5)
```

mupad [B]   time = 7.16, size = 780, normalized size = 8.76

$$-\frac{x^3\left(4\,A\,b^3\,d^3\,i^3+B\,b^3\,d^3\,i^3\right)+x^2\left(6\,A\,a\,b^2\,d^3\,i^3+\frac{3\,B\,a\,b^2\,d^3\,i^3}{2}+6\,A\,b^3\,c\,d^2\,i^3+\frac{3\,B\,b^3\,c\,d^2\,i^3}{2}\right)+x\left(4\,A\,a^2\,b\,d^3\,i^3+B\right.}{4\,a^4\,l}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^5,
x)
```

```
[Out] - (x^3*(4*A*b^3*d^3*i^3 + B*b^3*d^3*i^3) + x^2*(6*A*a*b^2*d^3*i^3 + (3*B*a*
b^2*d^3*i^3)/2 + 6*A*b^3*c*d^2*i^3 + (3*B*b^3*c*d^2*i^3)/2) + x*(4*A*a^2*b*
d^3*i^3 + B*a^2*b*d^3*i^3 + 4*A*b^3*c^2*d*i^3 + B*b^3*c^2*d*i^3 + 4*A*a*b^2
*c*d^2*i^3 + B*a*b^2*c*d^2*i^3) + A*a^3*d^3*i^3 + A*b^3*c^3*i^3 + (B*a^3*d^
3*i^3)/4 + (B*b^3*c^3*i^3)/4 + A*a*b^2*c^2*d*i^3 + A*a^2*b*c*d^2*i^3 + (B*a
*b^2*c^2*d*i^3)/4 + (B*a^2*b*c*d^2*i^3)/4)/(4*a^4*b^4*g^5 + 4*b^8*g^5*x^4 +
 16*a^3*b^5*g^5*x + 16*a*b^7*g^5*x^3 + 24*a^2*b^6*g^5*x^2) - (log((e*(a + b
*x))/(c + d*x))*(x^2*(b*(b*((B*a*d^3*i^3)/(4*b^5*g^5) + (B*c*d^2*i^3)/(4*b^
4*g^5)) + (B*a*d^3*i^3)/(2*b^4*g^5) + (B*c*d^2*i^3)/(2*b^3*g^5)) + (3*B*a*d
^3*i^3)/(4*b^3*g^5) + (3*B*c*d^2*i^3)/(4*b^2*g^5)) + x*(b*(a*((B*a*d^3*i^3)
/(4*b^5*g^5) + (B*c*d^2*i^3)/(4*b^4*g^5)) + (B*c^2*d*i^3)/(4*b^3*g^5)) + a*
(b*((B*a*d^3*i^3)/(4*b^5*g^5) + (B*c*d^2*i^3)/(4*b^4*g^5)) + (B*a*d^3*i^3)/
(2*b^4*g^5) + (B*c*d^2*i^3)/(2*b^3*g^5)) + (3*B*c^2*d*i^3)/(4*b^2*g^5)) + a
*(a*((B*a*d^3*i^3)/(4*b^5*g^5) + (B*c*d^2*i^3)/(4*b^4*g^5)) + (B*c^2*d*i^3)
/(4*b^3*g^5)) + (B*c^3*i^3)/(4*b^2*g^5) + (B*d^3*i^3*x^3)/(b^2*g^5)))/(4*a^
3*x + a^4/b + b^3*x^4 + 6*a^2*b*x^2 + 4*a*b^2*x^3) - (B*d^4*i^3*atan((b*c*2
i + b*d*x*2i)/(a*d - b*c) + 1i)*1i)/(2*b^4*g^5*(a*d - b*c))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**5,x)
```

```
[Out] Timed out
```

3.29 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^6}\,dx$

Optimal. Leaf size=181

$$-\frac{bi^3(c+dx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5g^6(a+bx)^5(bc-ad)^2}+\frac{di^3(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4g^6(a+bx)^4(bc-ad)^2}-\frac{bBi^3(c+dx)^5}{25g^6(a+bx)^5(bc-ad)^2}+\frac{Bdi^3(c+ }{16g^6(a+bx)^4(}$$

```
[Out] 1/16*B*d*i^3*(d*x+c)^4/(-a*d+b*c)^2/g^6/(b*x+a)^4-1/25*b*B*i^3*(d*x+c)^5/(-
a*d+b*c)^2/g^6/(b*x+a)^5+1/4*d*i^3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-
a*d+b*c)^2/g^6/(b*x+a)^4-1/5*b*i^3*(d*x+c)^5*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-
a*d+b*c)^2/g^6/(b*x+a)^5
```

Rubi [B] time = 0.87, antiderivative size = 409, normalized size of antiderivative = 2.26, number of steps used = 18, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2528, 2525, 12, 44}

$$-\frac{d^3i^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^4g^6(a+bx)^2}-\frac{d^2i^3(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^6(a+bx)^3}-\frac{3di^3(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4b^4g^6(a+bx)^4}-\frac{i^3(bc-ad}{5}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^6,
x]
```

```
[Out] -(B*(b*c - a*d)^3*i^3)/(25*b^4*g^6*(a + b*x)^5) - (11*B*d*(b*c - a*d)^2*i^3
)/(80*b^4*g^6*(a + b*x)^4) - (3*B*d^2*(b*c - a*d)*i^3)/(20*b^4*g^6*(a + b*x
)^3) - (B*d^3*i^3)/(40*b^4*g^6*(a + b*x)^2) + (B*d^4*i^3)/(20*b^4*(b*c - a*
d)*g^6*(a + b*x)) + (B*d^5*i^3*Log[a + b*x])/(20*b^4*(b*c - a*d)^2*g^6) - (
(b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(5*b^4*g^6*(a + b*x
)^5) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(4*b^4*
g^6*(a + b*x)^4) - (d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]
))/(b^4*g^6*(a + b*x)^3) - (d^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(
2*b^4*g^6*(a + b*x)^2) - (B*d^5*i^3*Log[c + d*x])/(20*b^4*(b*c - a*d)^2*g^6
)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(29c+29dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^6}dx = \int\left(\frac{24389(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^6(a+bx)^6}+\frac{73167d(bc-ad)^2\left(A\right.}{b^3g^6(a}\right.$$

$$= \frac{\left(24389d^3\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^3}dx}{b^3g^6}+\frac{\left(73167d^2(bc-ad)\right)\int\frac{A+B\log\left(\frac{e(a}{c}\right.}{(a+bx)^4}}{b^3g^6}$$

$$= -\frac{24389(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{5b^4g^6(a+bx)^5}-\frac{73167d(bc-ad)^2\left(A+\right.}{4b^4g^6(a+}$$

$$= -\frac{24389(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{5b^4g^6(a+bx)^5}-\frac{73167d(bc-ad)^2\left(A+\right.}{4b^4g^6(a+}$$

$$= -\frac{24389(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{5b^4g^6(a+bx)^5}-\frac{73167d(bc-ad)^2\left(A+\right.}{4b^4g^6(a+}$$

$$= -\frac{24389B(bc-ad)^3}{25b^4g^6(a+bx)^5}-\frac{268279Bd(bc-ad)^2}{80b^4g^6(a+bx)^4}-\frac{73167Bd^2(bc-ad)}{20b^4g^6(a+bx)^3}$$

Mathematica [B] time = 0.60, size = 608, normalized size = 3.36

$$-\frac{i^3\left(20a^5Ad^5+20a^5Bd^5\log(c+dx)+9a^5Bd^5+100a^4Abd^5x+100a^4bBd^5x\log(c+dx)+45a^4bBd^5x+200a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x)^6,x]
```

```
[Out] -1/400*(i^3*(80*A*b^5*c^5 + 16*b^5*B*c^5 - 100*a*A*b^4*c^4*d - 25*a*b^4*B*c
^4*d + 20*a^5*A*d^5 + 9*a^5*B*d^5 + 300*A*b^5*c^4*d*x + 55*b^5*B*c^4*d*x -
400*a*A*b^4*c^3*d^2*x - 100*a*b^4*B*c^3*d^2*x + 100*a^4*A*b*d^5*x + 45*a^4*
b*B*d^5*x + 400*A*b^5*c^3*d^2*x^2 + 60*b^5*B*c^3*d^2*x^2 - 600*a*A*b^4*c^2*
d^3*x^2 - 150*a*b^4*B*c^2*d^3*x^2 + 200*a^3*A*b^2*d^5*x^2 + 90*a^3*b^2*B*d^
5*x^2 + 200*A*b^5*c^2*d^3*x^3 + 10*b^5*B*c^2*d^3*x^3 - 400*a*A*b^4*c*d^4*x^
3 - 100*a*b^4*B*c*d^4*x^3 + 200*a^2*A*b^3*d^5*x^3 + 90*a^2*b^3*B*d^5*x^3 -
20*b^5*B*c*d^4*x^4 + 20*a*b^4*B*d^5*x^4 - 20*B*d^5*(a + b*x)^5*Log[a + b*x]
 + 20*B*(b*c - a*d)^2*(a^3*d^3 + a^2*b*d^2*(2*c + 5*d*x) + a*b^2*d*(3*c^2 +
 10*c*d*x + 10*d^2*x^2) + b^3*(4*c^3 + 15*c^2*d*x + 20*c*d^2*x^2 + 10*d^3*x
^3))*Log[(e*(a + b*x))/(c + d*x)] + 20*a^5*B*d^5*Log[c + d*x] + 100*a^4*b*B
*d^5*x*Log[c + d*x] + 200*a^3*b^2*B*d^5*x^2*Log[c + d*x] + 200*a^2*b^3*B*d^
5*x^3*Log[c + d*x] + 100*a*b^4*B*d^5*x^4*Log[c + d*x] + 20*b^5*B*d^5*x^5*Lo
g[c + d*x]))/(b^4*(b*c - a*d)^2*g^6*(a + b*x)^5)
```

fricas [B] time = 0.59, size = 644, normalized size = 3.56

$$\frac{20\left(Bb^5cd^4-Bab^4d^5\right)i^3x^4-10\left((20A+B)b^5c^2d^3-10(4A+B)ab^4cd^4+(20A+9B)a^2b^3d^5\right)i^3x^3-10\left(2(20\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^6,x, algor
ithm="fricas")
```

```
[Out] 1/400*(20*(B*b^5*c*d^4 - B*a*b^4*d^5)*i^3*x^4 - 10*((20*A + B)*b^5*c^2*d^3
- 10*(4*A + B)*a*b^4*c*d^4 + (20*A + 9*B)*a^2*b^3*d^5)*i^3*x^3 - 10*(2*(20*
A + 3*B)*b^5*c^3*d^2 - 15*(4*A + B)*a*b^4*c^2*d^3 + (20*A + 9*B)*a^3*b^2*d^
5)*i^3*x^2 - 5*((60*A + 11*B)*b^5*c^4*d - 20*(4*A + B)*a*b^4*c^3*d^2 + (20*
A + 9*B)*a^4*b*d^5)*i^3*x - (16*(5*A + B)*b^5*c^5 - 25*(4*A + B)*a*b^4*c^4*
d + (20*A + 9*B)*a^5*d^5)*i^3 + 20*(B*b^5*d^5*i^3*x^5 + 5*B*a*b^4*d^5*i^3*x
^4 - 10*(B*b^5*c^2*d^3 - 2*B*a*b^4*c*d^4)*i^3*x^3 - 10*(2*B*b^5*c^3*d^2 - 3
*B*a*b^4*c^2*d^3)*i^3*x^2 - 5*(3*B*b^5*c^4*d - 4*B*a*b^4*c^3*d^2)*i^3*x - (
4*B*b^5*c^5 - 5*B*a*b^4*c^4*d)*i^3)*log((b*e*x + a*e)/(d*x + c)))/((b^11*c^
2 - 2*a*b^10*c*d + a^2*b^9*d^2)*g^6*x^5 + 5*(a*b^10*c^2 - 2*a^2*b^9*c*d + a
^3*b^8*d^2)*g^6*x^4 + 10*(a^2*b^9*c^2 - 2*a^3*b^8*c*d + a^4*b^7*d^2)*g^6*x^
3 + 10*(a^3*b^8*c^2 - 2*a^4*b^7*c*d + a^5*b^6*d^2)*g^6*x^2 + 5*(a^4*b^7*c^2
 - 2*a^5*b^6*c*d + a^6*b^5*d^2)*g^6*x + (a^5*b^6*c^2 - 2*a^6*b^5*c*d + a^7*
b^4*d^2)*g^6)
```

giac [A] time = 3.24, size = 244, normalized size = 1.35

$$\frac{\left(80\,Bbie^{6}\log\left(\frac{bxe+ae}{dx+c}\right)-\frac{100\,(bxe+ae)Bdie^{5}\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c}+80\,Abie^{6}+16\,Bbie^{6}-\frac{100\,(bxe+ae)Adie^{5}}{dx+c}-\frac{25\,(bxe+ae)Bdie^{5}}{dx+c}\right)\left(\frac{bc}{(bce-ade)(\cdots}\right.}{400\left(\frac{(bxe+ae)^{5}bcg^{6}}{(dx+c)^{5}}-\frac{(bxe+ae)^{5}adg^{6}}{(dx+c)^{5}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^6,x, algor
ithm="giac")
```

```
[Out] 1/400*(80*B*b*i*e^6*log((b*x*e + a*e)/(d*x + c)) - 100*(b*x*e + a*e)*B*d*i*
e^5*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 80*A*b*i*e^6 + 16*B*b*i*e^6 -
100*(b*x*e + a*e)*A*d*i*e^5/(d*x + c) - 25*(b*x*e + a*e)*B*d*i*e^5/(d*x + c
))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/
((b*x*e + a*e)^5*b*c*g^6/(d*x + c)^5 - (b*x*e + a*e)^5*a*d*g^6/(d*x + c)^5)
```

maple [B] time = 0.05, size = 828, normalized size = 4.57

$$-\frac{Babd\,e^{5}i^{3}\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{5\,(ad-bc)^{3}\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^{5}g^{6}}+\frac{B\,b^{2}c\,e^{5}i^{3}\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{5\,(ad-bc)^{3}\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^{5}g^{6}}-\frac{Aabd\,e^{5}i^{3}}{5\,(ad-bc)^{3}\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^{5}g^{\cdots}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^6,x)
```

```
[Out] 1/4*d^2*e^4*i^3/(a*d-b*c)^3/g^6*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4
*a-1/4*d*e^4*i^3/(a*d-b*c)^3/g^6*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
4*b*c-1/5*d*e^5*i^3/(a*d-b*c)^3/g^6*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^5*a+1/5*e^5*i^3/(a*d-b*c)^3/g^6*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
+b/d*e)^5*c+1/4*d^2*e^4*i^3/(a*d-b*c)^3/g^6*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/4*d*e^4*i^3/(a*d-b*c)^3/g^
6*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*b*c+1/16*d^2*e^4*i^3/(a*d-b*c)^3/g^6*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)^4*a-1/16*d*e^4*i^3/(a*d-b*c)^3/g^6*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*
e+b/d*e)^4*b*c-1/5*d*e^5*i^3/(a*d-b*c)^3/g^6*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b
*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/5*e^5*i^3/(a*d-b*c)^3/g
^6*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+
```

```
c)/d*e)*c-1/25*d*e^5*i^3/(a*d-b*c)^3/g^6*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)^5*a+1/25*e^5*i^3/(a*d-b*c)^3/g^6*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b
*c/d*e+b/d*e)^5*c
```

maxima [B] time = 3.85, size = 4218, normalized size = 23.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^6,x, algor
ithm="maxima")
```

```
[Out] -1/1200*B*d^3*i^3*(60*(10*b^3*x^3 + 10*a*b^2*x^2 + 5*a^2*b*x + a^3)*log(b*e
*x/(d*x + c) + a*e/(d*x + c))/(b^9*g^6*x^5 + 5*a*b^8*g^6*x^4 + 10*a^2*b^7*g
^6*x^3 + 10*a^3*b^6*g^6*x^2 + 5*a^4*b^5*g^6*x + a^5*b^4*g^6) + (77*a^3*b^4*
c^4 - 548*a^4*b^3*c^3*d + 352*a^5*b^2*c^2*d^2 - 148*a^6*b*c*d^3 + 27*a^7*d^
4 - 60*(10*b^7*c^3*d - 10*a*b^6*c^2*d^2 + 5*a^2*b^5*c*d^3 - a^3*b^4*d^4)*x^
4 + 30*(10*b^7*c^4 - 100*a*b^6*c^3*d + 95*a^2*b^5*c^2*d^2 - 46*a^3*b^4*c*d^
3 + 9*a^4*b^3*d^4)*x^3 + 10*(50*a*b^6*c^4 - 410*a^2*b^5*c^3*d + 337*a^3*b^4
*c^2*d^2 - 148*a^4*b^3*c*d^3 + 27*a^5*b^2*d^4)*x^2 + 5*(65*a^2*b^5*c^4 - 48
8*a^3*b^4*c^3*d + 352*a^4*b^3*c^2*d^2 - 148*a^5*b^2*c*d^3 + 27*a^6*b*d^4)*x
)/((b^13*c^4 - 4*a*b^12*c^3*d + 6*a^2*b^11*c^2*d^2 - 4*a^3*b^10*c*d^3 + a^4
*b^9*d^4)*g^6*x^5 + 5*(a*b^12*c^4 - 4*a^2*b^11*c^3*d + 6*a^3*b^10*c^2*d^2 -
 4*a^4*b^9*c*d^3 + a^5*b^8*d^4)*g^6*x^4 + 10*(a^2*b^11*c^4 - 4*a^3*b^10*c^3
*d + 6*a^4*b^9*c^2*d^2 - 4*a^5*b^8*c*d^3 + a^6*b^7*d^4)*g^6*x^3 + 10*(a^3*b
^10*c^4 - 4*a^4*b^9*c^3*d + 6*a^5*b^8*c^2*d^2 - 4*a^6*b^7*c*d^3 + a^7*b^6*d
^4)*g^6*x^2 + 5*(a^4*b^9*c^4 - 4*a^5*b^8*c^3*d + 6*a^6*b^7*c^2*d^2 - 4*a^7*
b^6*c*d^3 + a^8*b^5*d^4)*g^6*x + (a^5*b^8*c^4 - 4*a^6*b^7*c^3*d + 6*a^7*b^6
*c^2*d^2 - 4*a^8*b^5*c*d^3 + a^9*b^4*d^4)*g^6) - 60*(10*b^3*c^3*d^2 - 10*a*
b^2*c^2*d^3 + 5*a^2*b*c*d^4 - a^3*d^5)*log(b*x + a)/((b^9*c^5 - 5*a*b^8*c^4
*d + 10*a^2*b^7*c^3*d^2 - 10*a^3*b^6*c^2*d^3 + 5*a^4*b^5*c*d^4 - a^5*b^4*d^
5)*g^6) + 60*(10*b^3*c^3*d^2 - 10*a*b^2*c^2*d^3 + 5*a^2*b*c*d^4 - a^3*d^5)*
log(d*x + c)/((b^9*c^5 - 5*a*b^8*c^4*d + 10*a^2*b^7*c^3*d^2 - 10*a^3*b^6*c^
2*d^3 + 5*a^4*b^5*c*d^4 - a^5*b^4*d^5)*g^6)) - 1/600*B*c*d^2*i^3*(60*(10*b^
2*x^2 + 5*a*b*x + a^2)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^8*g^6*x^5 +
5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x
 + a^5*b^3*g^6) + (47*a^2*b^4*c^4 - 278*a^3*b^3*c^3*d + 822*a^4*b^2*c^2*d^2
 - 278*a^5*b*c*d^3 + 47*a^6*d^4 + 60*(10*b^6*c^2*d^2 - 5*a*b^5*c*d^3 + a^2*
b^4*d^4)*x^4 - 30*(10*b^6*c^3*d - 95*a*b^5*c^2*d^2 + 46*a^2*b^4*c*d^3 - 9*a
^3*b^3*d^4)*x^3 + 10*(20*b^6*c^4 - 140*a*b^5*c^3*d + 537*a^2*b^4*c^2*d^2 -
248*a^3*b^3*c*d^3 + 47*a^4*b^2*d^4)*x^2 + 5*(35*a*b^5*c^4 - 218*a^2*b^4*c^3
*d + 702*a^3*b^3*c^2*d^2 - 278*a^4*b^2*c*d^3 + 47*a^5*b*d^4)*x)/((b^12*c^4
- 4*a*b^11*c^3*d + 6*a^2*b^10*c^2*d^2 - 4*a^3*b^9*c*d^3 + a^4*b^8*d^4)*g^6*
x^5 + 5*(a*b^11*c^4 - 4*a^2*b^10*c^3*d + 6*a^3*b^9*c^2*d^2 - 4*a^4*b^8*c*d^
3 + a^5*b^7*d^4)*g^6*x^4 + 10*(a^2*b^10*c^4 - 4*a^3*b^9*c^3*d + 6*a^4*b^8*c
^2*d^2 - 4*a^5*b^7*c*d^3 + a^6*b^6*d^4)*g^6*x^3 + 10*(a^3*b^9*c^4 - 4*a^4*b
^8*c^3*d + 6*a^5*b^7*c^2*d^2 - 4*a^6*b^6*c*d^3 + a^7*b^5*d^4)*g^6*x^2 + 5*(
a^4*b^8*c^4 - 4*a^5*b^7*c^3*d + 6*a^6*b^6*c^2*d^2 - 4*a^7*b^5*c*d^3 + a^8*b
^4*d^4)*g^6*x + (a^5*b^7*c^4 - 4*a^6*b^6*c^3*d + 6*a^7*b^5*c^2*d^2 - 4*a^8*
b^4*c*d^3 + a^9*b^3*d^4)*g^6) + 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)
*log(b*x + a)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c
^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6) - 60*(10*b^2*c^2*d^3 - 5*a*b*c
*d^4 + a^2*d^5)*log(d*x + c)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2
 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6)) - 1/400*B*c^2*
d*i^3*(60*(5*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^7*g^6*x^5 + 5
*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x
+ a^5*b^2*g^6) + (27*a*b^4*c^4 - 148*a^2*b^3*c^3*d + 352*a^3*b^2*c^2*d^2 -
548*a^4*b*c*d^3 + 77*a^5*d^4 - 60*(5*b^5*c*d^3 - a*b^4*d^4)*x^4 + 30*(5*b^5
*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^2*b^3*d^4)*x^3 - 10*(10*b^5*c^3*d - 67*a*b^
4*c^2*d^2 + 248*a^2*b^3*c*d^3 - 47*a^3*b^2*d^4)*x^2 + 5*(15*b^5*c^4 - 88*a*
```

```
b^4*c^3*d + 232*a^2*b^3*c^2*d^2 - 428*a^3*b^2*c*d^3 + 77*a^4*b*d^4)*x)/((b^
11*c^4 - 4*a*b^10*c^3*d + 6*a^2*b^9*c^2*d^2 - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4
)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a^2*b^9*c^3*d + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7
*c*d^3 + a^5*b^6*d^4)*g^6*x^4 + 10*(a^2*b^9*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b
^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a^6*b^5*d^4)*g^6*x^3 + 10*(a^3*b^8*c^4 - 4*a
^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 - 4*a^6*b^5*c*d^3 + a^7*b^4*d^4)*g^6*x^2 +
 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d + 6*a^6*b^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a
^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4 - 4*a^6*b^5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4*
a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6) - 60*(5*b*c*d^4 - a*d^5)*log(b*x + a)/((b
^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^
3*c*d^4 - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4 - a*d^5)*log(d*x + c)/((b^7*c^5
 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^
4 - a^5*b^2*d^5)*g^6)) - 1/300*B*c^3*i^3*((60*b^4*d^4*x^4 + 12*b^4*c^4 - 63
*a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2 - 163*a^3*b*c*d^3 + 137*a^4*d^4 - 30*(b^
4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 - 13*a*b^3*c*d^3 + 47*a^2*b^
2*d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a*b^3*c^2*d^2 + 43*a^2*b^2*c*d^3 - 77*a^3*
b*d^4)*x)/((b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3
+ a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2
 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g^6*x^4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3
*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6*b^4*d^4)*g^6*x^3 + 10*(a^3*b
^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^
4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b
^3*c*d^3 + a^8*b^2*d^4)*g^6*x + (a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*
c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d^4)*g^6) + 60*log(b*e*x/(d*x + c) + a*e/
(d*x + c))/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3
*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6) + 60*d^5*log(b*x + a)/((b^6*c^5 - 5
*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 -
a^5*b*d^5)*g^6) - 60*d^5*log(d*x + c)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^
4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6)) - 3/20*
(5*b*x + a)*A*c^2*d*i^3/(b^7*g^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3
 + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x + a^5*b^2*g^6) - 1/10*(10*b^2*x^2 +
 5*a*b*x + a^2)*A*c*d^2*i^3/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6
*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) - 1/20*(10*b^3*x
^3 + 10*a*b^2*x^2 + 5*a^2*b*x + a^3)*A*d^3*i^3/(b^9*g^6*x^5 + 5*a*b^8*g^6*x
^4 + 10*a^2*b^7*g^6*x^3 + 10*a^3*b^6*g^6*x^2 + 5*a^4*b^5*g^6*x + a^5*b^4*g^
6) - 1/5*A*c^3*i^3/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10
*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6)
```

mupad [B] time = 8.31, size = 1053, normalized size = 5.82

$$-\frac{20\,A\,a^4\,d^4\,i^3-80\,A\,b^4\,c^4\,i^3+9\,B\,a^4\,d^4\,i^3-16\,B\,b^4\,c^4\,i^3+20\,A\,a^2\,b^2\,c^2\,d^2\,i^3+9\,B\,a^2\,b^2\,c^2\,d^2\,i^3+20\,A\,a\,b^3\,c^3\,d\,i^3+20\,A\,a^3\,b\,c\,d^3\,i^3+9\,B\,a\,b^3\,c^3\,d\,i^3+9\,B\,a^3\,b\,c\,d}{20\,(a\,d-b\,c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^6,
x)
```

```
[Out] - ((20*A*a^4*d^4*i^3 - 80*A*b^4*c^4*i^3 + 9*B*a^4*d^4*i^3 - 16*B*b^4*c^4*i^
3 + 20*A*a^2*b^2*c^2*d^2*i^3 + 9*B*a^2*b^2*c^2*d^2*i^3 + 20*A*a*b^3*c^3*d*i
^3 + 20*A*a^3*b*c*d^3*i^3 + 9*B*a*b^3*c^3*d*i^3 + 9*B*a^3*b*c*d^3*i^3)/(20*
(a*d - b*c)) + (x^2*(20*A*a^2*b^2*d^4*i^3 + 9*B*a^2*b^2*d^4*i^3 - 40*A*b^4*
c^2*d^2*i^3 - 6*B*b^4*c^2*d^2*i^3 + 20*A*a*b^3*c*d^3*i^3 + 9*B*a*b^3*c*d^3*
i^3))/(2*(a*d - b*c)) + (x*(20*A*a^3*b*d^4*i^3 + 9*B*a^3*b*d^4*i^3 - 60*A*b
^4*c^3*d*i^3 - 11*B*b^4*c^3*d*i^3 + 20*A*a*b^3*c^2*d^2*i^3 + 20*A*a^2*b^2*c
*d^3*i^3 + 9*B*a*b^3*c^2*d^2*i^3 + 9*B*a^2*b^2*c*d^3*i^3))/(4*(a*d - b*c))
+ (x^3*(20*A*a*b^3*d^4*i^3 + 9*B*a*b^3*d^4*i^3 - 20*A*b^4*c*d^3*i^3 - B*b^4
*c*d^3*i^3))/(2*(a*d - b*c)) + (B*b^4*d^4*i^3*x^4)/(a*d - b*c))/(20*a^5*b^4
*g^6 + 20*b^9*g^6*x^5 + 100*a^4*b^5*g^6*x + 100*a*b^8*g^6*x^4 + 200*a^3*b^6
```

```
*g^6*x^2 + 200*a^2*b^7*g^6*x^3) - (log((e*(a + b*x))/(c + d*x))*(x^2*(b*(b*
((B*a*d^3*i^3)/(20*b^5*g^6) + (B*c*d^2*i^3)/(10*b^4*g^6)) + (3*B*a*d^3*i^3)
/(20*b^4*g^6) + (3*B*c*d^2*i^3)/(10*b^3*g^6)) + (3*B*a*d^3*i^3)/(10*b^3*g^6
) + (3*B*c*d^2*i^3)/(5*b^2*g^6)) + x*(b*(a*((B*a*d^3*i^3)/(20*b^5*g^6) + (B
*c*d^2*i^3)/(10*b^4*g^6)) + (3*B*c^2*d*i^3)/(20*b^3*g^6)) + a*(b*((B*a*d^3*
i^3)/(20*b^5*g^6) + (B*c*d^2*i^3)/(10*b^4*g^6)) + (3*B*a*d^3*i^3)/(20*b^4*g
^6) + (3*B*c*d^2*i^3)/(10*b^3*g^6)) + (3*B*c^2*d*i^3)/(5*b^2*g^6)) + a*(a*(
(B*a*d^3*i^3)/(20*b^5*g^6) + (B*c*d^2*i^3)/(10*b^4*g^6)) + (3*B*c^2*d*i^3)/
(20*b^3*g^6)) + (B*c^3*i^3)/(5*b^2*g^6) + (B*d^3*i^3*x^3)/(2*b^2*g^6)))/(5*
a^4*x + a^5/b + b^4*x^5 + 10*a^3*b*x^2 + 5*a*b^3*x^4 + 10*a^2*b^2*x^3) - (B
*d^5*i^3*atanh((20*b^6*c^2*g^6 - 20*a^2*b^4*d^2*g^6)/(20*b^4*g^6*(a*d - b*c
)^2) - (2*b*d*x)/(a*d - b*c)))/(10*b^4*g^6*(a*d - b*c)^2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**6,x)
[Out] Timed out
```

3.30 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^7}\,dx$

Optimal. Leaf size=281

$$-\frac{b^2i^3(c+dx)^6\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{6g^7(a+bx)^6(bc-ad)^3}-\frac{d^2i^3(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4g^7(a+bx)^4(bc-ad)^3}+\frac{2bdi^3(c+dx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5g^7(a+bx)^5(bc-ad)^3}-$$

```
[Out] -1/16*B*d^2*i^3*(d*x+c)^4/(-a*d+b*c)^3/g^7/(b*x+a)^4+2/25*b*B*d*i^3*(d*x+c)
^5/(-a*d+b*c)^3/g^7/(b*x+a)^5-1/36*b^2*B*i^3*(d*x+c)^6/(-a*d+b*c)^3/g^7/(b*
x+a)^6-1/4*d^2*i^3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^7/(
b*x+a)^4+2/5*b*d*i^3*(d*x+c)^5*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^7
/(b*x+a)^5-1/6*b^2*i^3*(d*x+c)^6*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g
^7/(b*x+a)^6
```

Rubi [A] time = 0.98, antiderivative size = 445, normalized size of antiderivative = 1.58, number of steps used = 18, number of rules used = 4, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2528, 2525, 12, 44}

$$-\frac{d^3i^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^4g^7(a+bx)^3}-\frac{3d^2i^3(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4b^4g^7(a+bx)^4}-\frac{3di^3(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{5b^4g^7(a+bx)^5}-\frac{i^3(bc-a}{}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g*x)^7,
x]
```

```
[Out] -(B*(b*c - a*d)^3*i^3)/(36*b^4*g^7*(a + b*x)^6) - (13*B*d*(b*c - a*d)^2*i^3
)/(150*b^4*g^7*(a + b*x)^5) - (19*B*d^2*(b*c - a*d)*i^3)/(240*b^4*g^7*(a +
b*x)^4) - (B*d^3*i^3)/(180*b^4*g^7*(a + b*x)^3) + (B*d^4*i^3)/(120*b^4*(b*c
 - a*d)*g^7*(a + b*x)^2) - (B*d^5*i^3)/(60*b^4*(b*c - a*d)^2*g^7*(a + b*x))
 - (B*d^6*i^3*Log[a + b*x])/(60*b^4*(b*c - a*d)^3*g^7) - ((b*c - a*d)^3*i^3
*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(6*b^4*g^7*(a + b*x)^6) - (3*d*(b*c
- a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(5*b^4*g^7*(a + b*x)^5)
- (3*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(4*b^4*g^7*(
a + b*x)^4) - (d^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^4*g^7*(a
+ b*x)^3) + (B*d^6*i^3*Log[c + d*x])/(60*b^4*(b*c - a*d)^3*g^7)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(30c+30dx)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ag+bgx)^7}\,dx = \int \left(\frac{27000(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^7(a+bx)^7} + \frac{81000d(bc-ad)^2 \left(A\right.}{b^3g^7(a\right.$$

$$= \frac{\left(27000d^3\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^4}\,dx}{b^3g^7} + \frac{\left(81000d^2(bc-ad)\right)\int \frac{A+B\log\left(\frac{e(a}{c+}\right)}{(a+bx)^5}}{b^3g^7}$$

$$= -\frac{4500(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^7(a+bx)^6} - \frac{16200d(bc-ad)^2 \left(A+\right.}{b^4g^7(a+bx}$$

$$= -\frac{4500(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^7(a+bx)^6} - \frac{16200d(bc-ad)^2 \left(A+\right.}{b^4g^7(a+bx}$$

$$= -\frac{4500(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^7(a+bx)^6} - \frac{16200d(bc-ad)^2 \left(A+\right.}{b^4g^7(a+bx}$$

$$= -\frac{750B(bc-ad)^3}{b^4g^7(a+bx)^6} - \frac{2340Bd(bc-ad)^2}{b^4g^7(a+bx)^5} - \frac{4275Bd^2(bc-ad)}{2b^4g^7(a+bx)^4} - \frac{1}{b^4g}$$

Mathematica [B] time = 1.05, size = 642, normalized size = 2.28

$$\frac{i^3 \left(1200d^3(a+bx)^3(ad-bc)^3 \left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) - 2700d^2(a+bx)^2(bc-ad)^4 \left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) + 2160d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a*g + b*g
*x)^7,x]
```

```
[Out] (i^3*(-100*B*(b*c - a*d)^6 + 432*a*B*d*(-(b*c) + a*d)^5 - 432*b*B*d*(b*c -
a*d)^5*x + 540*a*B*d^2*(b*c - a*d)^4*(a + b*x) + 120*B*d*(b*c - a*d)^5*(a +
 b*x) + 540*b*B*d^2*(b*c - a*d)^4*x*(a + b*x) - 825*B*d^2*(b*c - a*d)^4*(a
+ b*x)^2 + 720*a*B*d^3*(-(b*c) + a*d)^3*(a + b*x)^2 - 720*b*B*d^3*(b*c - a*
d)^3*x*(a + b*x)^2 + 1080*a*B*d^4*(b*c - a*d)^2*(a + b*x)^3 + 700*B*d^3*(b*
c - a*d)^3*(a + b*x)^3 + 1080*b*B*d^4*(b*c - a*d)^2*x*(a + b*x)^3 - 1050*B*
d^4*(b*c - a*d)^2*(a + b*x)^4 + 2160*a*B*d^5*(-(b*c) + a*d)*(a + b*x)^4 - 2
160*b*B*d^5*(b*c - a*d)*x*(a + b*x)^4 + 2100*B*d^5*(b*c - a*d)*(a + b*x)^5
- 2160*a*B*d^6*(a + b*x)^5*Log[a + b*x] - 2160*b*B*d^6*x*(a + b*x)^5*Log[a
+ b*x] + 2100*B*d^6*(a + b*x)^6*Log[a + b*x] - 600*(b*c - a*d)^6*(A + B*Log
[(e*(a + b*x))/(c + d*x)]) + 2160*d*(-(b*c) + a*d)^5*(a + b*x)*(A + B*Log[(
e*(a + b*x))/(c + d*x)]) - 2700*d^2*(b*c - a*d)^4*(a + b*x)^2*(A + B*Log[(e
*(a + b*x))/(c + d*x)]) + 1200*d^3*(-(b*c) + a*d)^3*(a + b*x)^3*(A + B*Log[
(e*(a + b*x))/(c + d*x)]) + 2160*a*B*d^6*(a + b*x)^5*Log[c + d*x] + 2160*b*
B*d^6*x*(a + b*x)^5*Log[c + d*x] - 2100*B*d^6*(a + b*x)^6*Log[c + d*x]))/(3
600*b^4*(b*c - a*d)^3*g^7*(a + b*x)^6)
```

fricas [B] time = 0.94, size = 991, normalized size = 3.53

$$-\frac{60\left(Bb^6cd^5 - Bab^5d^6\right)i^3x^5 - 30\left(Bb^6c^2d^4 - 12\,Bab^5cd^5 + 11\,Ba^2b^4d^6\right)i^3x^4 + 20\left((60\,A + B)b^6c^3d^3 - 9\,(20\,A + B)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^7,x, algor
ithm="fricas")
```

```
[Out] -1/3600*(60*(B*b^6*c*d^5 - B*a*b^5*d^6)*i^3*x^5 - 30*(B*b^6*c^2*d^4 - 12*B*
a*b^5*c*d^5 + 11*B*a^2*b^4*d^6)*i^3*x^4 + 20*((60*A + B)*b^6*c^3*d^3 - 9*(2
0*A + B)*a*b^5*c^2*d^4 + 45*(4*A + B)*a^2*b^4*c*d^5 - (60*A + 37*B)*a^3*b^3
*d^6)*i^3*x^3 + 15*((180*A + 19*B)*b^6*c^4*d^2 - 24*(20*A + 3*B)*a*b^5*c^3*
d^3 + 90*(4*A + B)*a^2*b^4*c^2*d^4 - (60*A + 37*B)*a^4*b^2*d^6)*i^3*x^2 + 6
*(4*(90*A + 13*B)*b^6*c^5*d - 15*(60*A + 11*B)*a*b^5*c^4*d^2 + 150*(4*A + B
)*a^2*b^4*c^3*d^3 - (60*A + 37*B)*a^5*b*d^6)*i^3*x + (100*(6*A + B)*b^6*c^6
 - 288*(5*A + B)*a*b^5*c^5*d + 225*(4*A + B)*a^2*b^4*c^4*d^2 - (60*A + 37*B
)*a^6*d^6)*i^3 + 60*(B*b^6*d^6*i^3*x^6 + 6*B*a*b^5*d^6*i^3*x^5 + 15*B*a^2*b
^4*d^6*i^3*x^4 + 20*(B*b^6*c^3*d^3 - 3*B*a*b^5*c^2*d^4 + 3*B*a^2*b^4*c*d^5)
*i^3*x^3 + 15*(3*B*b^6*c^4*d^2 - 8*B*a*b^5*c^3*d^3 + 6*B*a^2*b^4*c^2*d^4)*i
^3*x^2 + 6*(6*B*b^6*c^5*d - 15*B*a*b^5*c^4*d^2 + 10*B*a^2*b^4*c^3*d^3)*i^3*
x + (10*B*b^6*c^6 - 24*B*a*b^5*c^5*d + 15*B*a^2*b^4*c^4*d^2)*i^3)*log((b*e*
x + a*e)/(d*x + c)))/((b^13*c^3 - 3*a*b^12*c^2*d + 3*a^2*b^11*c*d^2 - a^3*b
^10*d^3)*g^7*x^6 + 6*(a*b^12*c^3 - 3*a^2*b^11*c^2*d + 3*a^3*b^10*c*d^2 - a^
4*b^9*d^3)*g^7*x^5 + 15*(a^2*b^11*c^3 - 3*a^3*b^10*c^2*d + 3*a^4*b^9*c*d^2
- a^5*b^8*d^3)*g^7*x^4 + 20*(a^3*b^10*c^3 - 3*a^4*b^9*c^2*d + 3*a^5*b^8*c*d
^2 - a^6*b^7*d^3)*g^7*x^3 + 15*(a^4*b^9*c^3 - 3*a^5*b^8*c^2*d + 3*a^6*b^7*c
*d^2 - a^7*b^6*d^3)*g^7*x^2 + 6*(a^5*b^8*c^3 - 3*a^6*b^7*c^2*d + 3*a^7*b^6*
c*d^2 - a^8*b^5*d^3)*g^7*x + (a^6*b^7*c^3 - 3*a^7*b^6*c^2*d + 3*a^8*b^5*c*d
^2 - a^9*b^4*d^3)*g^7)
```

giac [A] time = 4.08, size = 391, normalized size = 1.39

$$\frac{\left(600\,Bb^2ie^7\log\left(\frac{bxe+ae}{dx+c}\right) - \frac{1440\,(bxe+ae)Bbdie^6\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c} + \frac{900\,(bxe+ae)^2Bd^2ie^5\log\left(\frac{bxe+ae}{dx+c}\right)}{(dx+c)^2} + 600\,Ab^2ie^7 + 100\,Bb^2ie^7 - \frac{1440}{}\right.}{3600\left(\frac{(bxe+ae)^6b^2c^2g^7}{(dx+c)^6} - \frac{2\,(bxe+ae)^6abc}{(dx+c)^6}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^7,x, algor
ithm="giac")
```

```
[Out] 1/3600*(600*B*b^2*i*e^7*log((b*x*e + a*e)/(d*x + c)) - 1440*(b*x*e + a*e)*B
*b*d*i*e^6*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 900*(b*x*e + a*e)^2*B*d
^2*i*e^5*log((b*x*e + a*e)/(d*x + c))/(d*x + c)^2 + 600*A*b^2*i*e^7 + 100*B
*b^2*i*e^7 - 1440*(b*x*e + a*e)*A*b*d*i*e^6/(d*x + c) - 288*(b*x*e + a*e)*B
*b*d*i*e^6/(d*x + c) + 900*(b*x*e + a*e)^2*A*d^2*i*e^5/(d*x + c)^2 + 225*(b
*x*e + a*e)^2*B*d^2*i*e^5/(d*x + c)^2)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) -
 a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^6*b^2*c^2*g^7/(d*x + c)^
6 - 2*(b*x*e + a*e)^6*a*b*c*d*g^7/(d*x + c)^6 + (b*x*e + a*e)^6*a^2*d^2*g^7
/(d*x + c)^6)
```

maple [B] time = 0.05, size = 1262, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^7,x)
```

```
[Out] 1/4*d^3*e^4*i^3/(a*d-b*c)^4/g^7*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4
*a-1/4*d^2*e^4*i^3/(a*d-b*c)^4/g^7*A/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^4*b*c-2/5*d^2*e^5*i^3/(a*d-b*c)^4/g^7*A*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*
e+b/d*e)^5*a+2/5*d*e^5*i^3/(a*d-b*c)^4/g^7*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b
*c/d*e+b/d*e)^5*c+1/6*d*e^6*i^3/(a*d-b*c)^4/g^7*A*b^2/(1/(d*x+c)*a*e-1/(d*x
+c)*b*c/d*e+b/d*e)^6*a-1/6*e^6*i^3/(a*d-b*c)^4/g^7*A*b^3/(1/(d*x+c)*a*e-1/(
d*x+c)*b*c/d*e+b/d*e)^6*c+1/4*d^3*e^4*i^3/(a*d-b*c)^4/g^7*B/(1/(d*x+c)*a*e-
1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/4*d^2*e^4*i^
3/(a*d-b*c)^4/g^7*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)*b*c+1/16*d^3*e^4*i^3/(a*d-b*c)^4/g^7*B/(1/(d*x+c)*a*e-1/
(d*x+c)*b*c/d*e+b/d*e)^4*a-1/16*d^2*e^4*i^3/(a*d-b*c)^4/g^7*B/(1/(d*x+c)*a*
e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c-2/5*d^2*e^5*i^3/(a*d-b*c)^4/g^7*B*b/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2/5*d
*e^5*i^3/(a*d-b*c)^4/g^7*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/25*d^2*e^5*i^3/(a*d-b*c)^4/g^7*B*b/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a+2/25*d*e^5*i^3/(a*d-b*c)^4/g^7*B*b^2/
(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*c+1/6*d*e^6*i^3/(a*d-b*c)^4/g^7*B
*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)*a-1/6*e^6*i^3/(a*d-b*c)^4/g^7*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/36*d*e^6*i^3/(a*d-b*c)^4/g^7*B*b
^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*a-1/36*e^6*i^3/(a*d-b*c)^4/g^7
*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*c
```

maxima [B] time = 5.15, size = 5524, normalized size = 19.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^7,x, algor
ithm="maxima")
```

```
[Out] -1/3600*B*d^3*i^3*(60*(20*b^3*x^3 + 15*a*b^2*x^2 + 6*a^2*b*x + a^3)*log(b*e
*x/(d*x + c) + a*e/(d*x + c))/(b^10*g^7*x^6 + 6*a*b^9*g^7*x^5 + 15*a^2*b^8*
g^7*x^4 + 20*a^3*b^7*g^7*x^3 + 15*a^4*b^6*g^7*x^2 + 6*a^5*b^5*g^7*x + a^6*b
^4*g^7) + (57*a^3*b^5*c^5 - 405*a^4*b^4*c^4*d + 1470*a^5*b^3*c^3*d^2 - 730*
a^6*b^2*c^2*d^3 + 245*a^7*b*c*d^4 - 37*a^8*d^5 + 60*(20*b^8*c^3*d^2 - 15*a*
b^7*c^2*d^3 + 6*a^2*b^6*c*d^4 - a^3*b^5*d^5)*x^5 - 30*(20*b^8*c^4*d - 235*a
*b^7*c^3*d^2 + 171*a^2*b^6*c^2*d^3 - 67*a^3*b^5*c*d^4 + 11*a^4*b^4*d^5)*x^4
 + 20*(20*b^8*c^5 - 175*a*b^7*c^4*d + 866*a^2*b^6*c^3*d^2 - 604*a^3*b^5*c^2
*d^3 + 230*a^4*b^4*c*d^4 - 37*a^5*b^3*d^5)*x^3 + 15*(35*a*b^7*c^5 - 271*a^2
*b^6*c^4*d + 1128*a^3*b^5*c^3*d^2 - 700*a^4*b^4*c^2*d^3 + 245*a^5*b^3*c*d^4
 - 37*a^6*b^2*d^5)*x^2 + 6*(47*a^2*b^6*c^5 - 345*a^3*b^5*c^4*d + 1320*a^4*b
^4*c^3*d^2 - 730*a^5*b^3*c^2*d^3 + 245*a^6*b^2*c*d^4 - 37*a^7*b*d^5)*x)/((b
^15*c^5 - 5*a*b^14*c^4*d + 10*a^2*b^13*c^3*d^2 - 10*a^3*b^12*c^2*d^3 + 5*a^
4*b^11*c*d^4 - a^5*b^10*d^5)*g^7*x^6 + 6*(a*b^14*c^5 - 5*a^2*b^13*c^4*d + 1
0*a^3*b^12*c^3*d^2 - 10*a^4*b^11*c^2*d^3 + 5*a^5*b^10*c*d^4 - a^6*b^9*d^5)*
g^7*x^5 + 15*(a^2*b^13*c^5 - 5*a^3*b^12*c^4*d + 10*a^4*b^11*c^3*d^2 - 10*a^
5*b^10*c^2*d^3 + 5*a^6*b^9*c*d^4 - a^7*b^8*d^5)*g^7*x^4 + 20*(a^3*b^12*c^5
- 5*a^4*b^11*c^4*d + 10*a^5*b^10*c^3*d^2 - 10*a^6*b^9*c^2*d^3 + 5*a^7*b^8*c
*d^4 - a^8*b^7*d^5)*g^7*x^3 + 15*(a^4*b^11*c^5 - 5*a^5*b^10*c^4*d + 10*a^6*
b^9*c^3*d^2 - 10*a^7*b^8*c^2*d^3 + 5*a^8*b^7*c*d^4 - a^9*b^6*d^5)*g^7*x^2 +
 6*(a^5*b^10*c^5 - 5*a^6*b^9*c^4*d + 10*a^7*b^8*c^3*d^2 - 10*a^8*b^7*c^2*d^
3 + 5*a^9*b^6*c*d^4 - a^10*b^5*d^5)*g^7*x + (a^6*b^9*c^5 - 5*a^7*b^8*c^4*d
+ 10*a^8*b^7*c^3*d^2 - 10*a^9*b^6*c^2*d^3 + 5*a^10*b^5*c*d^4 - a^11*b^4*d^5
)*g^7) + 60*(20*b^3*c^3*d^3 - 15*a*b^2*c^2*d^4 + 6*a^2*b*c*d^5 - a^3*d^6)*l
og(b*x + a)/((b^10*c^6 - 6*a*b^9*c^5*d + 15*a^2*b^8*c^4*d^2 - 20*a^3*b^7*c^
3*d^3 + 15*a^4*b^6*c^2*d^4 - 6*a^5*b^5*c*d^5 + a^6*b^4*d^6)*g^7) - 60*(20*b
^3*c^3*d^3 - 15*a*b^2*c^2*d^4 + 6*a^2*b*c*d^5 - a^3*d^6)*log(d*x + c)/((b^1
```

0*c^6 - 6*a*b^9*c^5*d + 15*a^2*b^8*c^4*d^2 - 20*a^3*b^7*c^3*d^3 + 15*a^4*b^
6*c^2*d^4 - 6*a^5*b^5*c*d^5 + a^6*b^4*d^6)*g^7)) - 1/1200*B*c*d^2*i^3*(60*(
15*b^2*x^2 + 6*a*b*x + a^2)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^9*g^7*x
^6 + 6*a*b^8*g^7*x^5 + 15*a^2*b^7*g^7*x^4 + 20*a^3*b^6*g^7*x^3 + 15*a^4*b^5
*g^7*x^2 + 6*a^5*b^4*g^7*x + a^6*b^3*g^7) + (37*a^2*b^5*c^5 - 245*a^3*b^4*c
^4*d + 730*a^4*b^3*c^3*d^2 - 1470*a^5*b^2*c^2*d^3 + 405*a^6*b*c*d^4 - 57*a^
7*d^5 - 60*(15*b^7*c^2*d^3 - 6*a*b^6*c*d^4 + a^2*b^5*d^5)*x^5 + 30*(15*b^7*
c^3*d^2 - 171*a*b^6*c^2*d^3 + 67*a^2*b^5*c*d^4 - 11*a^3*b^4*d^5)*x^4 - 20*(
15*b^7*c^4*d - 126*a*b^6*c^3*d^2 + 604*a^2*b^5*c^2*d^3 - 230*a^3*b^4*c*d^4
+ 37*a^4*b^3*d^5)*x^3 + 15*(15*b^7*c^5 - 111*a*b^6*c^4*d + 388*a^2*b^5*c^3*
d^2 - 1000*a^3*b^4*c^2*d^3 + 365*a^4*b^3*c*d^4 - 57*a^5*b^2*d^5)*x^2 + 6*(2
7*a*b^6*c^5 - 185*a^2*b^5*c^4*d + 580*a^3*b^4*c^3*d^2 - 1270*a^4*b^3*c^2*d^
3 + 405*a^5*b^2*c*d^4 - 57*a^6*b*d^5)*x)/((b^14*c^5 - 5*a*b^13*c^4*d + 10*a
^2*b^12*c^3*d^2 - 10*a^3*b^11*c^2*d^3 + 5*a^4*b^10*c*d^4 - a^5*b^9*d^5)*g^7
x^6 + 6(a*b^13*c^5 - 5*a^2*b^12*c^4*d + 10*a^3*b^11*c^3*d^2 - 10*a^4*b^10
*c^2*d^3 + 5*a^5*b^9*c*d^4 - a^6*b^8*d^5)*g^7*x^5 + 15*(a^2*b^12*c^5 - 5*a^
3*b^11*c^4*d + 10*a^4*b^10*c^3*d^2 - 10*a^5*b^9*c^2*d^3 + 5*a^6*b^8*c*d^4 -
a^7*b^7*d^5)*g^7*x^4 + 20*(a^3*b^11*c^5 - 5*a^4*b^10*c^4*d + 10*a^5*b^9*c^
3*d^2 - 10*a^6*b^8*c^2*d^3 + 5*a^7*b^7*c*d^4 - a^8*b^6*d^5)*g^7*x^3 + 15*(a
^4*b^10*c^5 - 5*a^5*b^9*c^4*d + 10*a^6*b^8*c^3*d^2 - 10*a^7*b^7*c^2*d^3 + 5
*a^8*b^6*c*d^4 - a^9*b^5*d^5)*g^7*x^2 + 6*(a^5*b^9*c^5 - 5*a^6*b^8*c^4*d +
10*a^7*b^7*c^3*d^2 - 10*a^8*b^6*c^2*d^3 + 5*a^9*b^5*c*d^4 - a^10*b^4*d^5)*g
^7*x + (a^6*b^8*c^5 - 5*a^7*b^7*c^4*d + 10*a^8*b^6*c^3*d^2 - 10*a^9*b^5*c^2
*d^3 + 5*a^10*b^4*c*d^4 - a^11*b^3*d^5)*g^7) - 60*(15*b^2*c^2*d^4 - 6*a*b*c
*d^5 + a^2*d^6)*log(b*x + a)/((b^9*c^6 - 6*a*b^8*c^5*d + 15*a^2*b^7*c^4*d^2
- 20*a^3*b^6*c^3*d^3 + 15*a^4*b^5*c^2*d^4 - 6*a^5*b^4*c*d^5 + a^6*b^3*d^6)
g^7) + 60(15*b^2*c^2*d^4 - 6*a*b*c*d^5 + a^2*d^6)*log(d*x + c)/((b^9*c^6
- 6*a*b^8*c^5*d + 15*a^2*b^7*c^4*d^2 - 20*a^3*b^6*c^3*d^3 + 15*a^4*b^5*c^2*
d^4 - 6*a^5*b^4*c*d^5 + a^6*b^3*d^6)*g^7)) - 1/600*B*c^2*d*i^3*(60*(6*b*x +
a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^8*g^7*x^6 + 6*a*b^7*g^7*x^5 + 1
5*a^2*b^6*g^7*x^4 + 20*a^3*b^5*g^7*x^3 + 15*a^4*b^4*g^7*x^2 + 6*a^5*b^3*g^7
*x + a^6*b^2*g^7) + (22*a*b^5*c^5 - 140*a^2*b^4*c^4*d + 385*a^3*b^3*c^3*d^2
- 615*a^4*b^2*c^2*d^3 + 735*a^5*b*c*d^4 - 87*a^6*d^5 + 60*(6*b^6*c*d^4 - a
*b^5*d^5)*x^5 - 30*(6*b^6*c^2*d^3 - 67*a*b^5*c*d^4 + 11*a^2*b^4*d^5)*x^4 +
20*(6*b^6*c^3*d^2 - 49*a*b^5*c^2*d^3 + 230*a^2*b^4*c*d^4 - 37*a^3*b^3*d^5)*
x^3 - 15*(6*b^6*c^4*d - 43*a*b^5*c^3*d^2 + 145*a^2*b^4*c^2*d^3 - 365*a^3*b^
3*c*d^4 + 57*a^4*b^2*d^5)*x^2 + 6*(12*b^6*c^5 - 80*a*b^5*c^4*d + 235*a^2*b^
4*c^3*d^2 - 415*a^3*b^3*c^2*d^3 + 585*a^4*b^2*c*d^4 - 87*a^5*b*d^5)*x)/((b^
13*c^5 - 5*a*b^12*c^4*d + 10*a^2*b^11*c^3*d^2 - 10*a^3*b^10*c^2*d^3 + 5*a^4
*b^9*c*d^4 - a^5*b^8*d^5)*g^7*x^6 + 6*(a*b^12*c^5 - 5*a^2*b^11*c^4*d + 10*a
^3*b^10*c^3*d^2 - 10*a^4*b^9*c^2*d^3 + 5*a^5*b^8*c*d^4 - a^6*b^7*d^5)*g^7*x
^5 + 15*(a^2*b^11*c^5 - 5*a^3*b^10*c^4*d + 10*a^4*b^9*c^3*d^2 - 10*a^5*b^8*
c^2*d^3 + 5*a^6*b^7*c*d^4 - a^7*b^6*d^5)*g^7*x^4 + 20*(a^3*b^10*c^5 - 5*a^4
*b^9*c^4*d + 10*a^5*b^8*c^3*d^2 - 10*a^6*b^7*c^2*d^3 + 5*a^7*b^6*c*d^4 - a^
8*b^5*d^5)*g^7*x^3 + 15*(a^4*b^9*c^5 - 5*a^5*b^8*c^4*d + 10*a^6*b^7*c^3*d^2
- 10*a^7*b^6*c^2*d^3 + 5*a^8*b^5*c*d^4 - a^9*b^4*d^5)*g^7*x^2 + 6*(a^5*b^8
*c^5 - 5*a^6*b^7*c^4*d + 10*a^7*b^6*c^3*d^2 - 10*a^8*b^5*c^2*d^3 + 5*a^9*b^
4*c*d^4 - a^10*b^3*d^5)*g^7*x + (a^6*b^7*c^5 - 5*a^7*b^6*c^4*d + 10*a^8*b^5
*c^3*d^2 - 10*a^9*b^4*c^2*d^3 + 5*a^10*b^3*c*d^4 - a^11*b^2*d^5)*g^7) + 60*
(6*b*c*d^5 - a*d^6)*log(b*x + a)/((b^8*c^6 - 6*a*b^7*c^5*d + 15*a^2*b^6*c^4
*d^2 - 20*a^3*b^5*c^3*d^3 + 15*a^4*b^4*c^2*d^4 - 6*a^5*b^3*c*d^5 + a^6*b^2*
d^6)*g^7) - 60*(6*b*c*d^5 - a*d^6)*log(d*x + c)/((b^8*c^6 - 6*a*b^7*c^5*d +
15*a^2*b^6*c^4*d^2 - 20*a^3*b^5*c^3*d^3 + 15*a^4*b^4*c^2*d^4 - 6*a^5*b^3*c
*d^5 + a^6*b^2*d^6)*g^7)) + 1/360*B*c^3*i^3*((60*b^5*d^5*x^5 - 10*b^5*c^5 +
62*a*b^4*c^4*d - 163*a^2*b^3*c^3*d^2 + 237*a^3*b^2*c^2*d^3 - 213*a^4*b*c*d
^4 + 147*a^5*d^5 - 30*(b^5*c*d^4 - 11*a*b^4*d^5)*x^4 + 20*(b^5*c^2*d^3 - 8*
a*b^4*c*d^4 + 37*a^2*b^3*d^5)*x^3 - 15*(b^5*c^3*d^2 - 7*a*b^4*c^2*d^3 + 23*
a^2*b^3*c*d^4 - 57*a^3*b^2*d^5)*x^2 + 6*(2*b^5*c^4*d - 13*a*b^4*c^3*d^2 + 3
7*a^2*b^3*c^2*d^3 - 63*a^3*b^2*c*d^4 + 87*a^4*b*d^5)*x)/((b^12*c^5 - 5*a*b^

```
11*c^4*d + 10*a^2*b^10*c^3*d^2 - 10*a^3*b^9*c^2*d^3 + 5*a^4*b^8*c*d^4 - a^5
*b^7*d^5)*g^7*x^6 + 6*(a*b^11*c^5 - 5*a^2*b^10*c^4*d + 10*a^3*b^9*c^3*d^2 -
 10*a^4*b^8*c^2*d^3 + 5*a^5*b^7*c*d^4 - a^6*b^6*d^5)*g^7*x^5 + 15*(a^2*b^10
*c^5 - 5*a^3*b^9*c^4*d + 10*a^4*b^8*c^3*d^2 - 10*a^5*b^7*c^2*d^3 + 5*a^6*b^
6*c*d^4 - a^7*b^5*d^5)*g^7*x^4 + 20*(a^3*b^9*c^5 - 5*a^4*b^8*c^4*d + 10*a^5
*b^7*c^3*d^2 - 10*a^6*b^6*c^2*d^3 + 5*a^7*b^5*c*d^4 - a^8*b^4*d^5)*g^7*x^3
+ 15*(a^4*b^8*c^5 - 5*a^5*b^7*c^4*d + 10*a^6*b^6*c^3*d^2 - 10*a^7*b^5*c^2*d
^3 + 5*a^8*b^4*c*d^4 - a^9*b^3*d^5)*g^7*x^2 + 6*(a^5*b^7*c^5 - 5*a^6*b^6*c^
4*d + 10*a^7*b^5*c^3*d^2 - 10*a^8*b^4*c^2*d^3 + 5*a^9*b^3*c*d^4 - a^10*b^2*
d^5)*g^7*x + (a^6*b^6*c^5 - 5*a^7*b^5*c^4*d + 10*a^8*b^4*c^3*d^2 - 10*a^9*b
^3*c^2*d^3 + 5*a^10*b^2*c*d^4 - a^11*b*d^5)*g^7) - 60*log(b*e*x/(d*x + c) +
 a*e/(d*x + c))/(b^7*g^7*x^6 + 6*a*b^6*g^7*x^5 + 15*a^2*b^5*g^7*x^4 + 20*a^
3*b^4*g^7*x^3 + 15*a^4*b^3*g^7*x^2 + 6*a^5*b^2*g^7*x + a^6*b*g^7) + 60*d^6*
log(b*x + a)/((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^
3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)*g^7) - 60*d^6*log
(d*x + c)/((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d
^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)*g^7)) - 1/10*(6*b*x
+ a)*A*c^2*d*i^3/(b^8*g^7*x^6 + 6*a*b^7*g^7*x^5 + 15*a^2*b^6*g^7*x^4 + 20*a
^3*b^5*g^7*x^3 + 15*a^4*b^4*g^7*x^2 + 6*a^5*b^3*g^7*x + a^6*b^2*g^7) - 1/20
*(15*b^2*x^2 + 6*a*b*x + a^2)*A*c*d^2*i^3/(b^9*g^7*x^6 + 6*a*b^8*g^7*x^5 +
15*a^2*b^7*g^7*x^4 + 20*a^3*b^6*g^7*x^3 + 15*a^4*b^5*g^7*x^2 + 6*a^5*b^4*g^
7*x + a^6*b^3*g^7) - 1/60*(20*b^3*x^3 + 15*a*b^2*x^2 + 6*a^2*b*x + a^3)*A*d
^3*i^3/(b^10*g^7*x^6 + 6*a*b^9*g^7*x^5 + 15*a^2*b^8*g^7*x^4 + 20*a^3*b^7*g^
7*x^3 + 15*a^4*b^6*g^7*x^2 + 6*a^5*b^5*g^7*x + a^6*b^4*g^7) - 1/6*A*c^3*i^3
/(b^7*g^7*x^6 + 6*a*b^6*g^7*x^5 + 15*a^2*b^5*g^7*x^4 + 20*a^3*b^4*g^7*x^3 +
 15*a^4*b^3*g^7*x^2 + 6*a^5*b^2*g^7*x + a^6*b*g^7)
```

mupad [B] time = 9.73, size = 1396, normalized size = 4.97

$$\frac{B\,d^6\,i^3\,\mathrm{atanh}\left(\frac{60\,a^3\,b^4\,d^3\,g^7-60\,a^2\,b^5\,c\,d^2\,g^7-60\,a\,b^6\,c^2\,d\,g^7+60\,b^7\,c^3\,g^7}{60\,b^4\,g^7\,{\left(a\,d-b\,c\right)}^3}+\frac{2\,b\,d\,x\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}{{\left(a\,d-b\,c\right)}^3}\right)}{30\,b^4\,g^7\,{\left(a\,d-b\,c\right)}^3}-\frac{\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\,\left(x^2\,\left(b\,\left(b\,\left(\frac{B}{6}\right.\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(a*g + b*g*x)^7,
x)
```

```
[Out] (B*d^6*i^3*atanh((60*b^7*c^3*g^7 + 60*a^3*b^4*d^3*g^7 - 60*a*b^6*c^2*d*g^7
- 60*a^2*b^5*c*d^2*g^7)/(60*b^4*g^7*(a*d - b*c)^3) + (2*b*d*x*(a^2*d^2 + b^
2*c^2 - 2*a*b*c*d))/(a*d - b*c)^3))/(30*b^4*g^7*(a*d - b*c)^3) - (log((e*(a
 + b*x))/(c + d*x))*(x^2*(b*(b*((B*a*d^3*i^3)/(60*b^5*g^7) + (B*c*d^2*i^3)/
(20*b^4*g^7)) + (B*a*d^3*i^3)/(15*b^4*g^7) + (B*c*d^2*i^3)/(5*b^3*g^7)) + (
B*a*d^3*i^3)/(6*b^3*g^7) + (B*c*d^2*i^3)/(2*b^2*g^7)) + x*(b*(a*((B*a*d^3*i
^3)/(60*b^5*g^7) + (B*c*d^2*i^3)/(20*b^4*g^7)) + (B*c^2*d*i^3)/(10*b^3*g^7)
) + a*(b*((B*a*d^3*i^3)/(60*b^5*g^7) + (B*c*d^2*i^3)/(20*b^4*g^7)) + (B*a*d
^3*i^3)/(15*b^4*g^7) + (B*c*d^2*i^3)/(5*b^3*g^7)) + (B*c^2*d*i^3)/(2*b^2*g^
7)) + a*(a*((B*a*d^3*i^3)/(60*b^5*g^7) + (B*c*d^2*i^3)/(20*b^4*g^7)) + (B*c
^2*d*i^3)/(10*b^3*g^7)) + (B*c^3*i^3)/(6*b^2*g^7) + (B*d^3*i^3*x^3)/(3*b^2*
g^7)))/(6*a^5*x + a^6/b + b^5*x^6 + 15*a^4*b*x^2 + 6*a*b^4*x^5 + 20*a^3*b^2
*x^3 + 15*a^2*b^3*x^4) - ((60*A*a^5*d^5*i^3 + 600*A*b^5*c^5*i^3 + 37*B*a^5*
d^5*i^3 + 100*B*b^5*c^5*i^3 + 60*A*a^2*b^3*c^3*d^2*i^3 + 60*A*a^3*b^2*c^2*d
^3*i^3 + 37*B*a^2*b^3*c^3*d^2*i^3 + 37*B*a^3*b^2*c^2*d^3*i^3 - 840*A*a*b^4*
c^4*d*i^3 + 60*A*a^4*b*c*d^4*i^3 - 188*B*a*b^4*c^4*d*i^3 + 37*B*a^4*b*c*d^4
*i^3)/(60*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x^2*(60*A*a^3*b^2*d^5*i^3 + 3
7*B*a^3*b^2*d^5*i^3 + 180*A*b^5*c^3*d^2*i^3 + 19*B*b^5*c^3*d^2*i^3 - 300*A*
a*b^4*c^2*d^3*i^3 + 60*A*a^2*b^3*c*d^4*i^3 - 53*B*a*b^4*c^2*d^3*i^3 + 37*B*
a^2*b^3*c*d^4*i^3))/(4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x*(60*A*a^4*b*d^
5*i^3 + 37*B*a^4*b*d^5*i^3 + 360*A*b^5*c^4*d*i^3 + 52*B*b^5*c^4*d*i^3 - 540
*A*a*b^4*c^3*d^2*i^3 + 60*A*a^3*b^2*c*d^4*i^3 - 113*B*a*b^4*c^3*d^2*i^3 + 3
```

```
7*B*a^3*b^2*c*d^4*i^3 + 60*A*a^2*b^3*c^2*d^3*i^3 + 37*B*a^2*b^3*c^2*d^3*i^3
))/(10*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x^3*(60*A*a^2*b^3*d^5*i^3 + 37*B
*a^2*b^3*d^5*i^3 + 60*A*b^5*c^2*d^3*i^3 + B*b^5*c^2*d^3*i^3 - 120*A*a*b^4*c
*d^4*i^3 - 8*B*a*b^4*c*d^4*i^3))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (d*x
^4*(11*B*a*b^4*d^4*i^3 - B*b^5*c*d^3*i^3))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*
d)) + (B*b^5*d^5*i^3*x^5)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))/(60*a^6*b^4*g^7
+ 60*b^10*g^7*x^6 + 360*a^5*b^5*g^7*x + 360*a*b^9*g^7*x^5 + 900*a^4*b^6*g^7
*x^2 + 1200*a^3*b^7*g^7*x^3 + 900*a^2*b^8*g^7*x^4)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**7,x)
[Out] Timed out
```

3.31 $\int \frac{(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{ci+dix}\,dx$

Optimal. Leaf size=252

$$\frac{g^3(bc-ad)^3\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(6B\log\left(\frac{e(a+bx)}{c+dx}\right)+6A+11B\right)}{6d^4i}+\frac{g^3(a+bx)(bc-ad)^2\left(6B\log\left(\frac{e(a+bx)}{c+dx}\right)+6A+5B\right)}{6d^3i}-$$

```
[Out] 1/3*g^3*(b*x+a)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/d/i-1/6*(-a*d+b*c)*g^3*(b*x+a
)^2*(3*A+B+3*B*ln(e*(b*x+a)/(d*x+c)))/d^2/i+1/6*(-a*d+b*c)^2*g^3*(b*x+a)*(6
*A+5*B+6*B*ln(e*(b*x+a)/(d*x+c)))/d^3/i+1/6*(-a*d+b*c)^3*g^3*ln((-a*d+b*c)/
b/(d*x+c))*(6*A+11*B+6*B*ln(e*(b*x+a)/(d*x+c)))/d^4/i+B*(-a*d+b*c)^3*g^3*po
lylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i
```

Rubi [A] time = 0.63, antiderivative size = 408, normalized size of antiderivative = 1.62, number of steps used = 23, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2486, 31, 2525, 12, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{Bg^3(bc-ad)^3\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^4i}-\frac{g^3(a+bx)^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2d^2i}-\frac{g^3(bc-ad)^3\log(ci+dix)\left(B\log\right.}{d^4i}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x),x]
```

```
[Out] (A*b*(b*c - a*d)^2*g^3*x)/(d^3*i) + (5*b*B*(b*c - a*d)^2*g^3*x)/(6*d^3*i) -
 (B*(b*c - a*d)*g^3*(a + b*x)^2)/(6*d^2*i) + (B*(b*c - a*d)^2*g^3*(a + b*x)
*Log[(e*(a + b*x))/(c + d*x)])/(d^3*i) - ((b*c - a*d)*g^3*(a + b*x)^2*(A +
B*Log[(e*(a + b*x))/(c + d*x)]))/(2*d^2*i) + (g^3*(a + b*x)^3*(A + B*Log[(e
*(a + b*x))/(c + d*x)]))/(3*d*i) - (11*B*(b*c - a*d)^3*g^3*Log[c + d*x])/(6
*d^4*i) - (B*(b*c - a*d)^3*g^3*Log[i*(c + d*x)]^2)/(2*d^4*i) + (B*(b*c - a*
d)^3*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c*i + d*i*x])/(d^4*i) - ((b*
c - a*d)^3*g^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c*i + d*i*x])/(d^4*
i) + (B*(b*c - a*d)^3*g^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
```

```
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{31c+31dx}\,dx = \int\left(\frac{b(bc-ad)^2g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{31d^3}+\frac{(-bc+ad)^3g^3\left(A+B\log\right.}{d^3(31c+31dx)}\right.$$

$$=\frac{(bg)\int(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{31d}-\frac{\left(b(bc-ad)g^2\right)\int(ag+}{}$$

$$=\frac{Ab(bc-ad)^2g^3x}{31d^3}-\frac{(bc-ad)g^3(a+bx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{62d^2}+\frac{g^3(}{}$$

$$=\frac{Ab(bc-ad)^2g^3x}{31d^3}+\frac{B(bc-ad)^2g^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{31d^3}-\frac{(bc-ad)g}{}$$

$$=\frac{Ab(bc-ad)^2g^3x}{31d^3}+\frac{B(bc-ad)^2g^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{31d^3}-\frac{(bc-ad)g}{}$$

$$=\frac{Ab(bc-ad)^2g^3x}{31d^3}+\frac{5bB(bc-ad)^2g^3x}{186d^3}-\frac{B(bc-ad)g^3(a+bx)^2}{186d^2}+\frac{B(}{}$$

$$=\frac{Ab(bc-ad)^2g^3x}{31d^3}+\frac{5bB(bc-ad)^2g^3x}{186d^3}-\frac{B(bc-ad)g^3(a+bx)^2}{186d^2}+\frac{B(}{}$$

$$=\frac{Ab(bc-ad)^2g^3x}{31d^3}+\frac{5bB(bc-ad)^2g^3x}{186d^3}-\frac{B(bc-ad)g^3(a+bx)^2}{186d^2}+\frac{B(}{}$$

$$=\frac{Ab(bc-ad)^2g^3x}{31d^3}+\frac{5bB(bc-ad)^2g^3x}{186d^3}-\frac{B(bc-ad)g^3(a+bx)^2}{186d^2}+\frac{B(}{}$$

Mathematica [A] time = 0.29, size = 354, normalized size = 1.40

$$g^3\left(2d^3(a+bx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+3d^2(a+bx)^2(ad-bc)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-6(bc-ad)^3\log(i(c+dx\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i
*x),x]
```

```
[Out] (g^3*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b
*x))/(c + d*x)] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))
/(c + d*x)]) + 2*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B
*(b*c - a*d)^3*Log[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a +
 b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (-(b*c
) + a*d)*Log[c + d*x]) - 6*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)
])*Log[i*(c + d*x)] + 3*B*(b*c - a*d)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d
)] - Log[i*(c + d*x)])*Log[i*(c + d*x)] + 2*PolyLog[2, (b*(c + d*x))/(b*c -
 a*d)])))/(6*d^4*i)
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ab^3g^3x^3 + 3\,Aab^2g^3x^2 + 3\,Aa^2bg^3x + Aa^3g^3 + \left(Bb^3g^3x^3 + 3\,Bab^2g^3x^2 + 3\,Ba^2bg^3x + Ba^3g^3\right)\log\left(\frac{bex+}{dx+}\right.}{dix + ci}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorit
hm="fricas")
```

```
[Out] integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 +
 (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log((b*e
*x + a*e)/(d*x + c)))/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.16, size = 4297, normalized size = 17.05

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i),x)
```

```
[Out] -1/d*A*g^3/i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3-1/d*B*g^3/i*dilog
(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^3-11/6/d*B*g^3/i*ln(-b*e+(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^3-3/d^3*A*g^3/i*ln(-b*e+(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*d)*b^2*c^2*a-3/d^4*e*A*g^3/i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c
*e)*c^3+3/d^2*B*g^3/i*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^
2*b*c+15/d^2*e^2*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1
/(d*x+c)*b*c*e)^2*a^2*b^3*c^3/(d*x+c)^2+5/d^2*e^3*B*g^3/i*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^4*c^4/(d*x+c)^3*a^2+18
/d^2*e*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b
*c*e)*b^2*c^2/(d*x+c)*a^2-15/d*e^2*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/
(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3*b^2*c^2/(d*x+c)^2-2/d^3*e^3*B*g^3/i
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^5*c^
5/(d*x+c)^3*a-2*d*e^3*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*
d*e-1/(d*x+c)*b*c*e)^3*a^5*b*c/(d*x+c)^3-20/3/d*e^3*B*g^3/i*ln(b/d*e+(a*d-b
*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^3*c^3/(d*x+c)^3*a^3-
15/2/d^3*e^2*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*
x+c)*b*c*e)^2*a*b^4*c^4/(d*x+c)^2-12/d*e*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3*b*c/(d*x+c)-12/d^3*e*B*g^3/i*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*b^3*c^3/(d*
x+c)*a+11/6/d^4*B*g^3/i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b^3*c^3+1/
d^4*A*g^3/i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b^3*c^3+1/d^4*B*g^3/i*
dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b^3*c^3-1/d*B*g^3/i*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)
*a^3+7/2/d^3*e*B*g^3/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2*a+1/d^3*e^
3*A*g^3/i*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^2*a-3/2/d^4*e^2*A*g^3/i
*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3-7/6/d^4*e*B*g^3/i*b^4/(1/(d*x+
c)*a*d*e-1/(d*x+c)*b*c*e)*c^3+1/3/d*e^3*A*g^3/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x
```

```
+c)*b*c*e)^3*a^3+3/2/d*e^2*A*g^3/i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*
a^3+1/6/d*e^2*B*g^3/i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3-1/2/d^2*e
^2*B*g^3/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c-3/2/d^4*e^2*B*g^3/
i*b^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c
^3-3/2*d*e^2*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*
x+c)*b*c*e)^2*a^5/(d*x+c)^2+3/2/d*e^2*B*g^3/i*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^3+1/3/d*e^3*B*g^3/i*b^3*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^3+3/d*e*B*g
^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3*
b-3/d^4*e*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)*b^4*c^3-11/2/d^3*B*g^3/i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*
b^2*c^2*a+3*e*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d
*x+c)*b*c*e)*a^4/(d*x+c)+1/d^4*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-
(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b^3*c^3+3/d*e*A*g^3/i*b/(1/(d*x
+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3-9/d^2*e*A*g^3/i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+
c)*b*c*e)*a^2*c-7/2/d^2*e*B*g^3/i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2
*c+3/d^2*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)*d)/b/e)*a^2*b*c-3/d^3*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a*b^2*c^2+1/3*d^2*e^3*B*g^
3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^6
/(d*x+c)^3+1/2/d^3*e^2*B*g^3/i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2*
a-9/2/d^2*e^2*A*g^3/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2*c+9/2/d^3
*e^2*A*g^3/i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c^2-1/d^2*e^3*A*g^3/
i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c+7/6/d*e*B*g^3/i*b/(1/(d*x+c
)*a*d*e-1/(d*x+c)*b*c*e)*a^3-1/3/d^4*e^3*A*g^3/i*b^6/(1/(d*x+c)*a*d*e-1/(d*
x+c)*b*c*e)^3*c^3+3/2/d^4*e^2*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d
*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*b^5*c^5/(d*x+c)^2+1/d^3*e^3*B*g^3/i*b^5*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*c^2*a-9/2/d
^2*e^2*B*g^3/i*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+
c)*b*c*e)^2*a^2*c+1/3/d^4*e^3*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d
*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*b^6*c^6/(d*x+c)^3+9/2/d^3*e^2*B*g^3/i*b^4*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2*a+5*e
^3*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e
)^3*a^4*b^2*c^2/(d*x+c)^3+15/2*e^2*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/
(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4*b*c/(d*x+c)^2-1/d^2*e^3*B*g^3/i*b^4
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^3*a^2*c-
9/d^2*e*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*
b*c*e)*a^2*b^2*c+9/d^3*e*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)
*a*d*e-1/(d*x+c)*b*c*e)*a*b^3*c^2+3/d^4*e*B*g^3/i*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*b^4*c^4/(d*x+c)-1/6/d^4*e^2*B*g^3/
i*b^5/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^3+11/2/d^2*B*g^3/i*ln(-b*e+(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2*b*c+3/d^2*A*g^3/i*ln(-b*e+(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)*d)*a^2*b*c-3/d^3*B*g^3/i*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*d)/b/e)*b^2*c^2*a+9/d^3*e*A*g^3/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c
*e)*c^2*a-1/3/d^4*e^3*B*g^3/i*b^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c
)*a*d*e-1/(d*x+c)*b*c*e)^3*c^3
```

maxima [B] time = 1.79, size = 790, normalized size = 3.13

$$3\,Aa^2bg^3\left(\frac{x}{di}-\frac{c\log\left(dx+c\right)}{d^2i}\right)-\frac{1}{6}\,Ab^3g^3\left(\frac{6\,c^3\log\left(dx+c\right)}{d^4i}-\frac{2\,d^2x^3-3\,cdx^2+6\,c^2x}{d^3i}\right)+\frac{3}{2}\,Aab^2g^3\left(\frac{2\,c^2\log\left(dx+\right.}{d^3i}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorit
hm="maxima")
```

```
[Out] 3*A*a^2*b*g^3*(x/(d*i) - c*log(d*x + c)/(d^2*i)) - 1/6*A*b^3*g^3*(6*c^3*log
(d*x + c)/(d^4*i) - (2*d^2*x^3 - 3*c*d*x^2 + 6*c^2*x)/(d^3*i)) + 3/2*A*a*b^
2*g^3*(2*c^2*log(d*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A*a^3*g^3*lo
```

```
g(d*i*x + c*i)/(d*i) - (b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3
 - a^3*d^3*g^3)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(
b*d*x + a*d)/(b*c - a*d)))*B/(d^4*i) + 1/6*(6*a^3*d^3*g^3*log(e) - (6*g^3*l
og(e) + 11*g^3)*b^3*c^3 + 9*(2*g^3*log(e) + 3*g^3)*a*b^2*c^2*d - 18*(g^3*lo
g(e) + g^3)*a^2*b*c*d^2)*B*log(d*x + c)/(d^4*i) + 1/6*(2*B*b^3*d^3*g^3*x^3*
log(e) - ((3*g^3*log(e) + g^3)*b^3*c*d^2 - (9*g^3*log(e) + g^3)*a*b^2*d^3)*
B*x^2 + 3*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 - a^3*d^3*g^
3)*B*log(d*x + c)^2 + ((6*g^3*log(e) + 5*g^3)*b^3*c^2*d - 6*(3*g^3*log(e) +
 2*g^3)*a*b^2*c*d^2 + (18*g^3*log(e) + 7*g^3)*a^2*b*d^3)*B*x + (2*B*b^3*d^3
*g^3*x^3 - 3*(b^3*c*d^2*g^3 - 3*a*b^2*d^3*g^3)*B*x^2 + 6*(b^3*c^2*d*g^3 - 3
*a*b^2*c*d^2*g^3 + 3*a^2*b*d^3*g^3)*B*x + (6*a*b^2*c^2*d*g^3 - 15*a^2*b*c*d
^2*g^3 + 11*a^3*d^3*g^3)*B)*log(b*x + a) - (2*B*b^3*d^3*g^3*x^3 - 3*(b^3*c*
d^2*g^3 - 3*a*b^2*d^3*g^3)*B*x^2 + 6*(b^3*c^2*d*g^3 - 3*a*b^2*c*d^2*g^3 + 3
*a^2*b*d^3*g^3)*B*x)*log(d*x + c))/(d^4*i)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a g + b g x\right)^3 \left(A + B \ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)}{c\,i + d\,i\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x),x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x), x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

3.32 $\int \frac{(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{ci+dix}\,dx$

Optimal. Leaf size=198

$$-\frac{g^2(bc-ad)^2\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(2B\log\left(\frac{e(a+bx)}{c+dx}\right)+2A+3B\right)}{2d^3i}-\frac{g^2(a+bx)(bc-ad)\left(2B\log\left(\frac{e(a+bx)}{c+dx}\right)+2A+B\right)}{2d^2i}+\frac{g^2}{}$$

```
[Out] 1/2*g^2*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/d/i-1/2*(-a*d+b*c)*g^2*(b*x+a
)*(2*A+B+2*B*ln(e*(b*x+a)/(d*x+c)))/d^2/i-1/2*(-a*d+b*c)^2*g^2*ln((-a*d+b*c
)/b/(d*x+c))*(2*A+3*B+2*B*ln(e*(b*x+a)/(d*x+c)))/d^3/i-B*(-a*d+b*c)^2*g^2*p
olylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i
```

Rubi [A] time = 0.49, antiderivative size = 329, normalized size of antiderivative = 1.66, number of steps used = 19, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2486, 31, 2525, 12, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{Bg^2(bc-ad)^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^3i}+\frac{g^2(bc-ad)^2\log(ci+dix)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^3i}+\frac{g^2(a+bx)^2\left(B\log\left(\frac{e(a+}{c+}\right.\right.}{2di}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x),x]
```

```
[Out] -((A*b*(b*c - a*d)*g^2*x)/(d^2*i)) - (b*B*(b*c - a*d)*g^2*x)/(2*d^2*i) - (B
*(b*c - a*d)*g^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(d^2*i) + (g^2*(a
+ b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*d*i) + (3*B*(b*c - a*d)^2
*g^2*Log[c + d*x])/(2*d^3*i) + (B*(b*c - a*d)^2*g^2*Log[i*(c + d*x)]^2)/(2*
d^3*i) - (B*(b*c - a*d)^2*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c*i + d
*i*x])/(d^3*i) + ((b*c - a*d)^2*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Lo
g[c*i + d*i*x])/(d^3*i) - (B*(b*c - a*d)^2*g^2*PolyLog[2, (b*(c + d*x))/(b*
c - a*d)])/(d^3*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
```

```
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
```

```
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{32c+32dx}\,dx = \int\left(-\frac{b(bc-ad)g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{32d^2}+\frac{(bc-ad)^2g^2\left(A+B\log\right.}{d^2(32c+32dx)}\right.$$

$$=\frac{(bg)\int(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{32d}-\frac{\left(b(bc-ad)g^2\right)\int\left(A+\right.}{32d^2}$$

$$=-\frac{Ab(bc-ad)g^2x}{32d^2}+\frac{g^2(a+bx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{64d}+\frac{(bc-ad)^2g}{}$$

$$=-\frac{Ab(bc-ad)g^2x}{32d^2}-\frac{B(bc-ad)g^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{32d^2}+\frac{g^2(a+bx)}{}$$

$$=-\frac{Ab(bc-ad)g^2x}{32d^2}-\frac{B(bc-ad)g^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{32d^2}+\frac{g^2(a+bx)}{}$$

$$=-\frac{Ab(bc-ad)g^2x}{32d^2}-\frac{bB(bc-ad)g^2x}{64d^2}-\frac{B(bc-ad)g^2(a+bx)\log\left(\frac{e(a}{c+}\right.}{32d^2}$$

$$=-\frac{Ab(bc-ad)g^2x}{32d^2}-\frac{bB(bc-ad)g^2x}{64d^2}-\frac{B(bc-ad)g^2(a+bx)\log\left(\frac{e(a}{c+}\right.}{32d^2}$$

$$=-\frac{Ab(bc-ad)g^2x}{32d^2}-\frac{bB(bc-ad)g^2x}{64d^2}-\frac{B(bc-ad)g^2(a+bx)\log\left(\frac{e(a}{c+}\right.}{32d^2}$$

$$=-\frac{Ab(bc-ad)g^2x}{32d^2}-\frac{bB(bc-ad)g^2x}{64d^2}-\frac{B(bc-ad)g^2(a+bx)\log\left(\frac{e(a}{c+}\right.}{32d^2}$$

Mathematica [A] time = 0.18, size = 254, normalized size = 1.28

$$\frac{g^2\left(d^2(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2(bc-ad)^2\log(i(c+dx))\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-2Abdx(bc-ad)+2B\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i
*x),x]
```

```
[Out] (g^2*(-2*A*b*d*(b*c - a*d)*x + 2*B*d*(-(b*c) + a*d)*(a + b*x)*Log[(e*(a + b
*x))/(c + d*x)] + d^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*
B*(b*c - a*d)^2*Log[c + d*x] - B*(b*c - a*d)*(b*d*x + (-(b*c) + a*d)*Log[c
+ d*x]) + 2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[i*(c + d
*x)] - B*(b*c - a*d)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[i*(c + d
*x)])*Log[i*(c + d*x)] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(2*d^3*
i)
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{Ab^2g^2x^2+2\,Aabg^2x+Aa^2g^2+\left(Bb^2g^2x^2+2\,Babg^2x+Ba^2g^2\right)\log\left(\frac{bex+ae}{dx+c}\right)}{dix+ci},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorit
hm="fricas")
```

```
[Out] integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*
a*b*g^2*x + B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.14, size = 2309, normalized size = 11.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i),x)
```

```
[Out] -1/d*A*g^2/i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2-1/d*B*g^2/i*dilog
(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2-3/2/d*B*g^2/i*ln(-b*e+(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2-6/d*e*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/
d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2/(d*x+c)*b*c+2/d^2*e^2*B*g^2/i*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a/(d*x+c)
^2*b^3*c^3-3/d*e^2*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e
-1/(d*x+c)*b*c*e)^2*a^2/(d*x+c)^2*b^2*c^2+6/d^2*e*B*g^2/i*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a/(d*x+c)*b^2*c^2-4/d^2*e*
B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a
*b^2*c+2*e^2*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*
x+c)*b*c*e)^2*a^3/(d*x+c)^2*b*c-1/d^3*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b^2*c^2+1/2/d*e*B*g^2/i*
b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2+2*e*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3/(d*x+c)+2/d*e*B*g^2/i*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2*b-1/d^2*e^2
*A*g^2/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c*a+2/d^2*A*g^2/i*ln(-b*e+
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a*b*c-1/d^3*B*g^2/i*dilog(-(-b*e+(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b^2*c^2-1/d^3*A*g^2/i*ln(-b*e+(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)*d)*b^2*c^2-1/d*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-
b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2-3/2/d^3*B*g^2/i*ln(-b*e+(b/d*
e+(a*d-b*c)/(d*x+c)/d*e)*d)*b^2*c^2+2/d^3*e*A*g^2/i*b^3/(1/(d*x+c)*a*d*e-1/
(d*x+c)*b*c*e)*c^2+3/d^2*B*g^2/i*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b
*c*a+1/2/d^3*e^2*A*g^2/i*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2+1/2/d^
3*e*B*g^2/i*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2+1/2/d*e^2*A*g^2/i*b^2
/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2+2/d*e*A*g^2/i*b/(1/(d*x+c)*a*d*e-1
/(d*x+c)*b*c*e)*a^2+2/d^2*B*g^2/i*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)*d)/b/e)*a*b*c+2/d^2*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a*b*c-4/d^2*e*A*g^2/i*b^2/(1/(d*x+c)*a*d
*e-1/(d*x+c)*b*c*e)*a*c-1/d^2*e*B*g^2/i*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*
e)*a*c-2/d^3*e*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(
d*x+c)*b*c*e)*b^3*c^3/(d*x+c)-1/d^2*e^2*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/
d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*b^3*c*a-1/2/d^3*e^2*B*g^2/i*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*b^4*c^4/(d*x+
c)^2+1/2/d*e^2*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(
d*x+c)*b*c*e)^2*a^2*b^2+2/d^3*e*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/
```

```
(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*b^3*c^2-1/2*d*e^2*B*g^2/i*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4/(d*x+c)^2+1/2/d^3*e^2
*B*g^2/i*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^
2*b^4*c^2
```

maxima [B] time = 1.74, size = 477, normalized size = 2.41

$$2\,Aabg^2\left(\frac{x}{di}-\frac{c\log\left(dx+c\right)}{d^2i}\right)+\frac{1}{2}\,Ab^2g^2\left(\frac{2\,c^2\log\left(dx+c\right)}{d^3i}+\frac{dx^2-2\,cx}{d^2i}\right)+\frac{Aa^2g^2\log\left(dix+ci\right)}{di}+\frac{\left(b^2c^2g^2-2\,abc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorit
hm="maxima")
```

```
[Out] 2*A*a*b*g^2*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + 1/2*A*b^2*g^2*(2*c^2*log(d
*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A*a^2*g^2*log(d*i*x + c*i)/(d*
i) + (b^2*c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)*(log(b*x + a)*log((b*d*x +
 a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^3*i) + 1/2
*(2*a^2*d^2*g^2*log(e) + (2*g^2*log(e) + 3*g^2)*b^2*c^2 - 4*(g^2*log(e) + g
^2)*a*b*c*d)*B*log(d*x + c)/(d^3*i) + 1/2*(B*b^2*d^2*g^2*x^2*log(e) - (b^2*
c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)*B*log(d*x + c)^2 - ((2*g^2*log(e) +
g^2)*b^2*c*d - (4*g^2*log(e) + g^2)*a*b*d^2)*B*x + (B*b^2*d^2*g^2*x^2 - 2*(
b^2*c*d*g^2 - 2*a*b*d^2*g^2)*B*x - (2*a*b*c*d*g^2 - 3*a^2*d^2*g^2)*B)*log(b
*x + a) - (B*b^2*d^2*g^2*x^2 - 2*(b^2*c*d*g^2 - 2*a*b*d^2*g^2)*B*x)*log(d*x
 + c))/(d^3*i)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^2\,\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}{c\,i+d\,i\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x),x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x), x
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{g^2\left(\int \frac{Aa^2}{c+dx}\,dx+\int \frac{Ab^2x^2}{c+dx}\,dx+\int \frac{Ba^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{c+dx}\,dx+\int \frac{2Aabx}{c+dx}\,dx+\int \frac{Bb^2x^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{c+dx}\,dx+\int \frac{2Babx\log\left(\frac{ae}{c+dx}+\frac{b}{c}\right.}{c+dx}\right.}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x)
```

```
[Out] g**2*(Integral(A*a**2/(c + d*x), x) + Integral(A*b**2*x**2/(c + d*x), x) +
Integral(B*a**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x) + Integr
al(2*A*a*b*x/(c + d*x), x) + Integral(B*b**2*x**2*log(a*e/(c + d*x) + b*e*x
/(c + d*x))/(c + d*x), x) + Integral(2*B*a*b*x*log(a*e/(c + d*x) + b*e*x/(c
 + d*x))/(c + d*x), x))/i
```

3.33 $\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{ci+dix}\,dx$

Optimal. Leaf size=125

$$\frac{g(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A+B\right)}{d^2i}+\frac{g(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{di}+\frac{Bg(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)}{d^2i}$$

```
[Out] g*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/d/i+(-a*d+b*c)*g*ln((-a*d+b*c)/b/(d*x
+c))*(A+B+B*ln(e*(b*x+a)/(d*x+c)))/d^2/i+B*(-a*d+b*c)*g*polylog(2,d*(b*x+a)
/b/(d*x+c))/d^2/i
```

Rubi [A] time = 0.35, antiderivative size = 213, normalized size of antiderivative = 1.70, number of steps used = 14, number of rules used = 11, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.290, Rules used = {2528, 2486, 31, 2524, 12, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{Bg(bc-ad)\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^2i}-\frac{g(bc-ad)\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i}-\frac{Bg(bc-ad)\log^2(c+dx)}{2d^2i}+\frac{Bg(bc\cdot}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x),x]
```

```
[Out] (A*b*g*x)/(d*i) + (B*g*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(d*i) - (B*(
b*c - a*d)*g*Log[c + d*x])/(d^2*i) + (B*(b*c - a*d)*g*Log[-((d*(a + b*x))/(
b*c - a*d))]*Log[c + d*x])/(d^2*i) - ((b*c - a*d)*g*(A + B*Log[(e*(a + b*x)
)/(c + d*x)])*Log[c + d*x])/(d^2*i) - (B*(b*c - a*d)*g*Log[c + d*x]^2)/(2*d
^2*i) + (B*(b*c - a*d)*g*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{33c+33dx}\,dx = \int \left(\frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{33d} + \frac{(-bc+ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{33d(c+dx)}\right)dx$$

$$= \frac{(bg)\int \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{33d} - \frac{((bc-ad)g)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}dx}{33d}$$

$$= \frac{Abgx}{33d} - \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(c+dx)}{33d^2} + \frac{(bBg)\int \log\left(\frac{e(a\cdots}{c+\cdots}\right.}{33d}$$

$$= \frac{Abgx}{33d} + \frac{Bg(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{33d} - \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(\cdots}{33d^2}$$

$$= \frac{Abgx}{33d} + \frac{Bg(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{33d} - \frac{B(bc-ad)g\log(c+dx)}{33d^2} - \frac{(bc-ad)\cdots}{\cdots}$$

$$= \frac{Abgx}{33d} + \frac{Bg(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{33d} - \frac{B(bc-ad)g\log(c+dx)}{33d^2} - \frac{(bc-ad)\cdots}{\cdots}$$

$$= \frac{Abgx}{33d} + \frac{Bg(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{33d} - \frac{B(bc-ad)g\log(c+dx)}{33d^2} + \frac{B(bc-a\cdots}{\cdots}$$

$$= \frac{Abgx}{33d} + \frac{Bg(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{33d} - \frac{B(bc-ad)g\log(c+dx)}{33d^2} + \frac{B(bc-a\cdots}{\cdots}$$

$$= \frac{Abgx}{33d} + \frac{Bg(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{33d} - \frac{B(bc-ad)g\log(c+dx)}{33d^2} + \frac{B(bc-a\cdots}{\cdots}$$

Mathematica [A] time = 0.11, size = 162, normalized size = 1.30

$$\frac{g\left(-2(bc-ad)\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2Bd(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)+B(bc-ad)\left(2\text{Li}_2\left(\frac{b(c+dx)}{bc-ad}\right)+\log(c\cdots\right.\right.}{2d^2i}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x
),x]
```

```
[Out] (g*(2*A*b*d*x + 2*B*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - 2*B*(b*c - a
*d)*Log[c + d*x] - 2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c
 + d*x] + B*(b*c - a*d)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x
])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(2*d^2*i)
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Abgx + Aag + \left(Bbgx + Bag\right)\log\left(\frac{bex+ae}{dx+c}\right)}{dix+ci}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm
="fricas")
```

```
[Out] integral((A*b*g*x + A*a*g + (B*b*g*x + B*a*g)*log((b*e*x + a*e)/(d*x + c)))
/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm
="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.13, size = 895, normalized size = 7.16

$$\frac{B\,a^2eg\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)(dx+c)\,i}-\frac{2Babceg\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)(dx+c)\,di}+\frac{B\,b^2c^2eg\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)(dx+c)\,d^2i}+\frac{Babeg\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{\left(\frac{ade}{dx+c}-\frac{bce}{dx+c}\right)di}-\frac{B\,b^2c}{(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i),x)
```

```
[Out] 1/d*e*g/i*A*b/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a-1/d^2*e*g/i*A*b^2/(1/(d*x
+c)*a*d*e-1/(d*x+c)*b*c*e)*c-1/d*g/i*A*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)*d)*a+1/d^2*g/i*A*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b*c-1/d*g/i*B*l
n(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+1/d^2*g/i*B*ln(-b*e+(b/d*e+(a*d-b
*c)/(d*x+c)/d*e)*d)*b*c+1/d*e*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x
+c)*a*d*e-1/(d*x+c)*b*c*e)*b*a-1/d^2*e*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*b^2*c+e*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a^2-2/d*e*g/i*B*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a*b*c+1/d^2
*e*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/
(d*x+c)*b^2*c^2-1/d*g/i*B*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e
)*a+1/d^2*g/i*B*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b*c-1/d*
g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*d)/b/e)*a+1/d^2*g/i*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b*c
```

maxima [A] time = 1.68, size = 221, normalized size = 1.77

$$Abg\left(\frac{x}{di}-\frac{c\log(dx+c)}{d^2i}\right)+\frac{Aag\log(dix+ci)}{di}-\frac{(bcg-adg)\left(\log(bx+a)\log\left(\frac{bdx+ad}{bc-ad}+1\right)+\mathrm{Li}_2\left(-\frac{bdx+ad}{bc-ad}\right)\right)B}{d^2i}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm
="maxima")
```

```
[Out] A*b*g*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + A*a*g*log(d*i*x + c*i)/(d*i) - (
b*c*g - a*d*g)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b
*d*x + a*d)/(b*c - a*d)))*B/(d^2*i) + (a*d*g*log(e) - (g*log(e) + g)*b*c)*B
*log(d*x + c)/(d^2*i) - 1/2*(2*B*b*d*g*x*log(d*x + c) - 2*B*b*d*g*x*log(e)
- (b*c*g - a*d*g)*B*log(d*x + c)^2 - 2*(B*b*d*g*x + B*a*d*g)*log(b*x + a))/
(d^2*i)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a\,g+b\,g\,x\right)\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)}{c\,i+d\,i\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x),x)
```

```
[Out] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{g\left(\int \frac{Aa}{c+dx}\,dx + \int \frac{Abx}{c+dx}\,dx + \int \frac{Ba\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{c+dx}\,dx + \int \frac{Bbx\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{c+dx}\,dx\right)}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x)
```

```
[Out] g*(Integral(A*a/(c + d*x), x) + Integral(A*b*x/(c + d*x), x) + Integral(B*a
*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x) + Integral(B*b*x*log(a*
e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x))/i
```

3.34 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{ci+dix}\,dx$

Optimal. Leaf size=76

$$-\frac{\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{di}-\frac{B\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)}{di}$$

```
[Out] -ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/d/i-B*polylog(2,d*(b*
x+a)/b/(d*x+c))/d/i
```

Rubi [A] time = 0.22, antiderivative size = 122, normalized size of antiderivative = 1.61, number of steps used = 10, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267, Rules used = {2524, 12, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{B\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{di}+\frac{\log(ci+dix)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{di}-\frac{B\log(ci+dix)\log\left(-\frac{d(a+bx)}{bc-ad}\right)}{di}+\frac{B\log^2(i(c+dx))}{2di}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/(c*i + d*i*x),x]
```

```
[Out] (B*Log[i*(c + d*x)]^2)/(2*d*i) - (B*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c
*i + d*i*x])/(d*i) + ((A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c*i + d*i*x]
)/(d*i) - (B*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
```

```
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{34c+34dx}\,dx = \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(34c+34dx)}{34d} - \frac{B\int \frac{(c+dx)\left(-\frac{de(a+bx)}{(c+dx)^2}+\frac{be}{c+dx}\right)\log(34c+34dx)}{e(a+bx)}\,dx}{34d}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(34c+34dx)}{34d} - \frac{B\int \frac{(c+dx)\left(-\frac{de(a+bx)}{(c+dx)^2}+\frac{be}{c+dx}\right)\log(34c+34dx)}{a+bx}\,dx}{34de}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(34c+34dx)}{34d} - \frac{B\int \left(\frac{be\log(34c+34dx)}{a+bx}-\frac{de\log(34c+34dx)}{c+dx}\right)dx}{34de}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(34c+34dx)}{34d} + \frac{1}{34}B\int \frac{\log(34c+34dx)}{c+dx}\,dx - \frac{(bB)\int \frac{\log(34c}{a+}}{34d}$$

$$= -\frac{B\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(34c+34dx)}{34d} + \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(34c+34dx)}{34d} + B\int \frac{1}{}$$

$$= -\frac{B\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(34c+34dx)}{34d} + \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(34c+34dx)}{34d} + \frac{B\,\mathrm{Sub}}{}$$

$$= \frac{B\log^2(34(c+dx))}{68d} - \frac{B\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(34c+34dx)}{34d} + \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(3}{34d}$$

Mathematica [A] time = 0.03, size = 95, normalized size = 1.25

$$\frac{\log(i(c+dx))\left(2B\log\left(\frac{e(a+bx)}{c+dx}\right)-2B\log\left(\frac{d(a+bx)}{ad-bc}\right)+2A+B\log(i(c+dx))\right)-2B\mathrm{Li}_2\left(\frac{b(c+dx)}{bc-ad}\right)}{2di}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/(c*i + d*i*x),x]
```

```
[Out] (Log[i*(c + d*x)]*(2*A - 2*B*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*B*Log[(e
*(a + b*x))/(c + d*x)] + B*Log[i*(c + d*x)]) - 2*B*PolyLog[2, (b*(c + d*x))
/(b*c - a*d)])/(2*d*i)
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{B\log\left(\frac{bex+ae}{dx+c}\right)+A}{dix+ci},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="fricas")
[Out] integral((B*log((b*e*x + a*e)/(d*x + c)) + A)/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="giac")
[Out] Timed out
```

maple [B] time = 0.05, size = 411, normalized size = 5.41

$$-\frac{Ba\ln\left(-\frac{-be+\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)d}{be}\right)\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)\,i}+\frac{Bbc\ln\left(-\frac{-be+\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)d}{be}\right)\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)\,di}-\frac{Aa\ln\left(-be+\left(\frac{be}{d}+\right.\right.}{(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i),x)
[Out] -1/i/(a*d-b*c)*A*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+1/d/i/(a*d-b*c)
*A*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b*c-1/i/(a*d-b*c)*B*dilog(-(-b*
e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1/d/i/(a*d-b*c)*B*dilog(-(-b*e+(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b*c-1/i/(a*d-b*c)*B*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1/d/i/(a*d-b
*c)*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*d)/b/e)*b*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}B\left(\frac{\log\left(dx+c\right)^2}{di}-2\int\frac{\log\left(bx+a\right)+\log(e)}{dix+ci}\,dx\right)+\frac{A\log\left(dix+ci\right)}{di}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x, algorithm="maxima")
[Out] -1/2*B*(log(d*x + c)^2/(d*i) - 2*integrate((log(b*x + a) + log(e))/(d*i*x +
 c*i), x)) + A*log(d*i*x + c*i)/(d*i)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)}{c\,i+d\,i\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/(c*i + d*i*x),x)
```

```
[Out] int((A + B*log((e*(a + b*x))/(c + d*x)))/(c*i + d*i*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A}{c+dx}\,dx + \int \frac{B\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{c+dx}\,dx}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i),x)
```

```
[Out] (Integral(A/(c + d*x), x) + Integral(B*log(a*e/(c + d*x) + b*e*x/(c + d*x))
/(c + d*x), x))/i
```

3.35 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)(ci+dix)}\,dx$

Optimal. Leaf size=44

$$\frac{\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2Bgi(bc-ad)}$$

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

Rubi [C] time = 0.58, antiderivative size = 304, normalized size of antiderivative = 6.91, number of steps used = 20, number of rules used = 9, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.225, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{gi(bc-ad)}+\frac{B\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{gi(bc-ad)}+\frac{\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{gi(bc-ad)}-\frac{\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)\right.}{gi(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)*(c*i + d*i*x)),x]
```

```
[Out] -(B*Log[a + b*x]^2)/(2*(b*c - a*d)*g*i) + (Log[a + b*x]*(A + B*Log[(e*(a +
b*x))/(c + d*x)]))/((b*c - a*d)*g*i) + (B*Log[-((d*(a + b*x))/(b*c - a*d))]
*Log[c + d*x])/((b*c - a*d)*g*i) - ((A + B*Log[(e*(a + b*x))/(c + d*x)])*Lo
g[c + d*x])/((b*c - a*d)*g*i) - (B*Log[c + d*x]^2)/(2*(b*c - a*d)*g*i) + (B
*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (B*PolyLo
g[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)*g*i) + (B*PolyLog[2, (b*(c
 + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(35c+35dx)(ag+bgx)}dx = \int \left(\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{35(bc-ad)g(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{35(bc-ad)g(c+dx)}\right)dx$$

$$= \frac{b\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}dx}{35(bc-ad)g} - \frac{d\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}dx}{35(bc-ad)g}$$

$$= \frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{35(bc-ad)g} - \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(c+dx)}{35(bc-ad)g} - B\int$$

$$= \frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{35(bc-ad)g} - \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(c+dx)}{35(bc-ad)g} - B\int$$

$$= \frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{35(bc-ad)g} - \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(c+dx)}{35(bc-ad)g} - B\int($$

$$= \frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{35(bc-ad)g} - \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(c+dx)}{35(bc-ad)g} - \frac{(bB)}{35}$$

$$= \frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{35(bc-ad)g} + \frac{B\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(c+dx)}{35(bc-ad)g} - \left(A+B\log\right.$$

$$= -\frac{B\log^2(a+bx)}{70(bc-ad)g} + \frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{35(bc-ad)g} + \frac{B\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(c}{35(bc-ad)g}$$

$$= -\frac{B\log^2(a+bx)}{70(bc-ad)g} + \frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{35(bc-ad)g} + \frac{B\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(c}{35(bc-ad)g}$$

Mathematica [C] time = 0.12, size = 207, normalized size = 4.70

$$\frac{2A\log(a+bx)+2B\log(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)-2B\log(c+dx)\log\left(\frac{e(a+bx)}{c+dx}\right)+2B\text{Li}_2\left(\frac{d(a+bx)}{ad-bc}\right)+2B\text{Li}_2\left(\frac{b(c+dx)}{bc-ad}\right.}{2gi(}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)*(c*i + d*i*x)
),x]
```

```
[Out] (2*A*Log[a + b*x] - B*Log[a + b*x]^2 + 2*B*Log[a + b*x]*Log[(e*(a + b*x))/(
c + d*x)] - 2*A*Log[c + d*x] + 2*B*Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c
+ d*x] - 2*B*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - B*Log[c + d*x]^2 +
 2*B*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] + 2*B*PolyLog[2, (d*(a + b
*x))/(-(b*c) + a*d)] + 2*B*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(2*(b*c -
 a*d)*g*i)
```

fricas [A] time = 0.74, size = 60, normalized size = 1.36

$$\frac{B\log\left(\frac{bex+ae}{dx+c}\right)^2+2A\log\left(\frac{bex+ae}{dx+c}\right)}{2(bc-ad)gi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm
="fricas")
```

```
[Out] 1/2*(B*log((b*e*x + a*e)/(d*x + c))^2 + 2*A*log((b*e*x + a*e)/(d*x + c)))/(
(b*c - a*d)*g*i)
```

giac [B] time = 0.35, size = 113, normalized size = 2.57

$$-\frac{\left(Bie\log\left(\frac{bxe+ae}{dx+c}\right)^2+2\,Aie\log\left(\frac{bxe+ae}{dx+c}\right)\right)\left(\frac{bc}{(bce-ade)(bc-ad)}-\frac{ad}{(bce-ade)(bc-ad)}\right)}{2g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm
="giac")
```

```
[Out] -1/2*(B*i*e*log((b*x*e + a*e)/(d*x + c))^2 + 2*A*i*e*log((b*x*e + a*e)/(d*x
 + c)))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*
d)))/g
```

maple [B] time = 0.05, size = 201, normalized size = 4.57

$$-\frac{Bad\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{2\,(ad-bc)^2\,gi}+\frac{Bbc\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{2\,(ad-bc)^2\,gi}-\frac{Aad\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2\,gi}+\frac{Abc\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2\,gi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)/(d*i*x+c*i),x)
```

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

maxima [B] time = 1.14, size = 172, normalized size = 3.91

$$B\left(\frac{\log(bx+a)}{(bc-ad)gi}-\frac{\log(dx+c)}{(bc-ad)gi}\right)\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)+A\left(\frac{\log(bx+a)}{(bc-ad)gi}-\frac{\log(dx+c)}{(bc-ad)gi}\right)-\frac{\left(\log(bx+a)^2-2\log(b\ldots\right.}{2\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i),x, algorithm
="maxima")
```

```
[Out] B*(log(b*x + a)/((b*c - a*d)*g*i) - log(d*x + c)/((b*c - a*d)*g*i))*log(b*e
*x/(d*x + c) + a*e/(d*x + c)) + A*(log(b*x + a)/((b*c - a*d)*g*i) - log(d*x
 + c)/((b*c - a*d)*g*i)) - 1/2*(log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c
) + log(d*x + c)^2)*B/(b*c*g*i - a*d*g*i)
```

mupad [B] time = 5.74, size = 69, normalized size = 1.57

$$-\frac{B\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2-A\,\mathrm{atan}\left(\frac{b\,c\,2\mathrm{i}+b\,d\,x\,2\mathrm{i}}{a\,d-b\,c}+1\mathrm{i}\right)\,4\mathrm{i}}{2\,g\,i\,(a\,d-b\,c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)*(c*i + d*i*x)),x)
```

```
[Out] -(B*log((e*(a + b*x))/(c + d*x))^2 - A*atan((b*c*2i + b*d*x*2i)/(a*d - b*c)
 + 1i)*4i)/(2*g*i*(a*d - b*c))
```

sympy [B] time = 1.13, size = 170, normalized size = 3.86

$$A\left(\frac{\log\left(x+\frac{-\frac{a^2d^2}{ad-bc}+\frac{2abcd}{ad-bc}+ad-\frac{b^2c^2}{ad-bc}+bc}{2bd}\right)}{gi\left(ad-bc\right)}-\frac{\log\left(x+\frac{\frac{a^2d^2}{ad-bc}-\frac{2abcd}{ad-bc}+ad+\frac{b^2c^2}{ad-bc}+bc}{2bd}\right)}{gi\left(ad-bc\right)}\right)-\frac{B\log\left(\frac{e(a+bx)}{c+dx}\right)^2}{2adgi-2bcgi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i),x)
```

```
[Out] A*(log(x + (-a**2*d**2/(a*d - b*c) + 2*a*b*c*d/(a*d - b*c) + a*d - b**2*c**
2/(a*d - b*c) + b*c)/(2*b*d))/(g*i*(a*d - b*c)) - log(x + (a**2*d**2/(a*d -
 b*c) - 2*a*b*c*d/(a*d - b*c) + a*d + b**2*c**2/(a*d - b*c) + b*c)/(2*b*d))
/(g*i*(a*d - b*c))) - B*log(e*(a + b*x)/(c + d*x))**2/(2*a*d*g*i - 2*b*c*g*
i)
```

3.36 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^2(ci+dix)}\,dx$

Optimal. Leaf size=173

$$-\frac{d\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i(bc-ad)^2}-\frac{b(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i(a+bx)(bc-ad)^2}-\frac{bB(c+dx)}{g^2i(a+bx)(bc-ad)^2}+\frac{Bd\log^2\left(\frac{a+bx}{c+dx}\right)}{2g^2i(bc-ad)^2}$$

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

Rubi [C] time = 0.70, antiderivative size = 437, normalized size of antiderivative = 2.53, number of steps used = 24, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{Bd\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^2i(bc-ad)^2}-\frac{Bd\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^2i(bc-ad)^2}-\frac{d\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i(bc-ad)^2}-\frac{B\log\left(\frac{e(a+bx)}{c+dx}\right)+A}{g^2i(a+bx)(bc-ad)}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^2*(c*i + d*i*x)),x]
```

```
[Out] -(B/((b*c - a*d)*g^2*i*(a + b*x))) - (B*d*Log[a + b*x])/((b*c - a*d)^2*g^2*
i) + (B*d*Log[a + b*x]^2)/(2*(b*c - a*d)^2*g^2*i) - (A + B*Log[(e*(a + b*x)
)/(c + d*x)])/((b*c - a*d)*g^2*i*(a + b*x)) - (d*Log[a + b*x]*(A + B*Log[(e
*(a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g^2*i) + (B*d*Log[c + d*x])/((b*c -
 a*d)^2*g^2*i) - (B*d*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c
 - a*d)^2*g^2*i) + (d*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((
b*c - a*d)^2*g^2*i) + (B*d*Log[c + d*x]^2)/(2*(b*c - a*d)^2*g^2*i) - (B*d*L
og[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i) - (B*d*Po
lyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g^2*i) - (B*d*PolyLo
g[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(36c+36dx)(ag+bgx)^2}\,dx = \int \left(\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{36(bc-ad)g^2(a+bx)^2} - \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{36(bc-ad)^2g^2(a+bx)} + \frac{d^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{36(bc-ad)^2g^2(c+dx}\right.$$

$$= -\frac{(bd)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}\,dx}{36(bc-ad)^2g^2} + \frac{d^2\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}\,dx}{36(bc-ad)^2g^2} + \frac{b\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2}\,dx}{36(bc-ad)g^2}$$

$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{36(bc-ad)^2g^2} + \frac{d\left(A+B\log\left(\right.\right.}{36(b}$$

$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{36(bc-ad)^2g^2} + \frac{d\left(A+B\log\left(\right.\right.}{36(b}$$

$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{36(bc-ad)^2g^2} + \frac{d\left(A+B\log\left(\right.\right.}{36(b}$$

$$= -\frac{B}{36(bc-ad)g^2(a+bx)} - \frac{Bd\log(a+bx)}{36(bc-ad)^2g^2} - \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc-ad)g^2(a+bx)} - \frac{d\log(a+}{}$$

$$= -\frac{B}{36(bc-ad)g^2(a+bx)} - \frac{Bd\log(a+bx)}{36(bc-ad)^2g^2} - \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{36(bc-ad)g^2(a+bx)} - \frac{d\log(a+}{}$$

$$= -\frac{B}{36(bc-ad)g^2(a+bx)} - \frac{Bd\log(a+bx)}{36(bc-ad)^2g^2} + \frac{Bd\log^2(a+bx)}{72(bc-ad)^2g^2} - \frac{A+B\log\left(\frac{e(a}{c+}\right.}{36(bc-ad)g^2(a}$$

$$= -\frac{B}{36(bc-ad)g^2(a+bx)} - \frac{Bd\log(a+bx)}{36(bc-ad)^2g^2} + \frac{Bd\log^2(a+bx)}{72(bc-ad)^2g^2} - \frac{A+B\log\left(\frac{e(a}{c+}\right.}{36(bc-ad)g^2(a}$$

Mathematica [C] time = 0.32, size = 292, normalized size = 1.69

$$-\frac{2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2d(a+bx)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-2d(a+bx)\log(c+dx)\left(B\log\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^2*(c*i + d*i*
x)),x]
```

```
[Out] -1/2*(2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*d*(a + b*x)*Lo
g[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2*d*(a + b*x)*(A + B*Log[
(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 2*B*(b*c - a*d + d*(a + b*x)*Log[a
 + b*x] - d*(a + b*x)*Log[c + d*x]) - B*d*(a + b*x)*(Log[a + b*x]*(Log[a +
b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*
c) + a*d)]) + B*d*(a + b*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c +
 d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d
)^2*g^2*i*(a + b*x))
```

fricas [A] time = 1.19, size = 144, normalized size = 0.83

$$-\frac{2\,(A+B)bc-2\,(A+B)ad+(Bbdx+Bad)\log\left(\frac{bex+ae}{dx+c}\right)^2+2\,((A+B)bdx+Bbc+Aad)\log\left(\frac{bex+ae}{dx+c}\right)}{2\left(\left(b^3c^2-2\,ab^2cd+a^2bd^2\right)g^2ix+\left(ab^2c^2-2\,a^2bcd+a^3d^2\right)g^2i\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorit
hm="fricas")
```

```
[Out] -1/2*(2*(A + B)*b*c - 2*(A + B)*a*d + (B*b*d*x + B*a*d)*log((b*e*x + a*e)/(
d*x + c))^2 + 2*((A + B)*b*d*x + B*b*c + A*a*d)*log((b*e*x + a*e)/(d*x + c)
))/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^2*i*x + (a*b^2*c^2 - 2*a^2*b*c*d
+ a^3*d^2)*g^2*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.05, size = 605, normalized size = 3.50

$$-\frac{Babde\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^3\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)g^2i}-\frac{Ba\,d^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{2\,(ad-bc)^3\,g^2i}+\frac{B\,b^2ce\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^3\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)g^2i}+\frac{Bbcd\ln\left(\frac{be}{d}\right.}{2\,(ad-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2/(d*i*x+c*i),x)
```

```
[Out] -d^2/i/(a*d-b*c)^3/g^2*A*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d/i/(a*d-b*c)^3/
g^2*A*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-d*e/i/(a*d-b*c)^3/g^2*A*b/(1/(d*x
+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+e/i/(a*d-b*c)^3/g^2*A*b^2/(1/(d*x+c)*a*e
-1/(d*x+c)*b*c/d*e+b/d*e)*c-1/2*d^2/i/(a*d-b*c)^3/g^2*B*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)^2*a+1/2*d/i/(a*d-b*c)^3/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^
2*b*c-d*e/i/(a*d-b*c)^3/g^2*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+e/i/(a*d-b*c)^3/g^2*B*b^2/(1/(d*x+c)*a*e-1/(
d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d*e/i/(a*d-b*c)^3/g
^2*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+e/i/(a*d-b*c)^3/g^2*B*b^2/
(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c
```

maxima [B] time = 1.32, size = 424, normalized size = 2.45

$$-B\left(\frac{1}{\left(b^2c-abd\right)g^2ix+\left(abc-a^2d\right)g^2i}+\frac{d\log\left(bx+a\right)}{\left(b^2c^2-2\,abcd+a^2d^2\right)g^2i}-\frac{d\log\left(dx+c\right)}{\left(b^2c^2-2\,abcd+a^2d^2\right)g^2i}\right)\log\left(\frac{bex}{dx+c}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i),x, algorit
hm="maxima")
```

```
[Out] -B*(1/((b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/((
b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*c*
d + a^2*d^2)*g^2*i))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - A*(1/((b^2*c -
a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/((b^2*c^2 - 2*a*b*
c*d + a^2*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2
*i)) + 1/2*((b*d*x + a*d)*log(b*x + a)^2 + (b*d*x + a*d)*log(d*x + c)^2 - 2
*b*c + 2*a*d - 2*(b*d*x + a*d)*log(b*x + a) + 2*(b*d*x + a*d - (b*d*x + a*d
)*log(b*x + a))*log(d*x + c))*B/(a*b^2*c^2*g^2*i - 2*a^2*b*c*d*g^2*i + a^3*
d^2*g^2*i + (b^3*c^2*g^2*i - 2*a*b^2*c*d*g^2*i + a^2*b*d^2*g^2*i)*x)
```

mupad [**B**] time = 5.84, size = 241, normalized size = 1.39

$$\frac{A+B}{(a\,d-b\,c)\,\left(a\,g^2\,i+b\,g^2\,i\,x\right)}-\frac{B\,d\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2}{2\,g^2\,i\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}+\frac{B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\,(a\,d-b\,c)}{b\,d\,g^2\,i\,\left(\frac{x}{d}+\frac{a}{b\,d}\right)\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}+\frac{d\,\mathrm{atan}\Big(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^2*(c*i + d*i*x)),x)
```

```
[Out] (A + B)/((a*d - b*c)*(a*g^2*i + b*g^2*i*x)) + (d*atan(((2*b*d*x + (a^2*d^2*
g^2*i - b^2*c^2*g^2*i)/(g^2*i*(a*d - b*c)))*1i)/(a*d - b*c))*(A + B)*2i)/(g
^2*i*(a*d - b*c)^2) - (B*d*log((e*(a + b*x))/(c + d*x))^2)/(2*g^2*i*(a^2*d^
2 + b^2*c^2 - 2*a*b*c*d)) + (B*log((e*(a + b*x))/(c + d*x))*(a*d - b*c))/(b
*d*g^2*i*(x/d + a/(b*d))*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))
```

sympy [**B**] time = 2.51, size = 386, normalized size = 2.23

$$-\frac{Bd\log\left(\frac{e(a+bx)}{c+dx}\right)^2}{2a^2d^2g^2i-4abcdg^2i+2b^2c^2g^2i}+\frac{B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a^2dg^2i-abcg^2i+abdg^2ix-b^2cg^2ix}+(A+B)\left(\frac{d\log\left(x+\frac{-\frac{a^3d^4}{(ad-bc)^2}+\frac{3a^2bcd^3}{(ad-bc)^2}-\frac{3ab^2c^2}{(ad-b}}{2bd}\right.}{g^2i\,(ad-bc)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**2/(d*i*x+c*i),x)
```

```
[Out] -B*d*log(e*(a + b*x)/(c + d*x))**2/(2*a**2*d**2*g**2*i - 4*a*b*c*d*g**2*i +
 2*b**2*c**2*g**2*i) + B*log(e*(a + b*x)/(c + d*x))/(a**2*d*g**2*i - a*b*c*
g**2*i + a*b*d*g**2*i*x - b**2*c*g**2*i*x) + (A + B)*(d*log(x + (-a**3*d**4
/(a*d - b*c)**2 + 3*a**2*b*c*d**3/(a*d - b*c)**2 - 3*a*b**2*c**2*d**2/(a*d
- b*c)**2 + a*d**2 + b**3*c**3*d/(a*d - b*c)**2 + b*c*d)/(2*b*d**2))/(g**2*
i*(a*d - b*c)**2) - d*log(x + (a**3*d**4/(a*d - b*c)**2 - 3*a**2*b*c*d**3/(
a*d - b*c)**2 + 3*a*b**2*c**2*d**2/(a*d - b*c)**2 + a*d**2 - b**3*c**3*d/(a
*d - b*c)**2 + b*c*d)/(2*b*d**2))/(g**2*i*(a*d - b*c)**2) + 1/(a**2*d*g**2*
i - a*b*c*g**2*i + x*(a*b*d*g**2*i - b**2*c*g**2*i)))
```

3.37 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^3(ci+dix)}\,dx$

Optimal. Leaf size=255

$$-\frac{b^2(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^3i(a+bx)^2(bc-ad)^3}+\frac{d^2\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^3i(bc-ad)^3}+\frac{2bd(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^3i(a+bx)(bc-ad)^3}-\frac{B\ldots}{2\ldots}$$

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

Rubi [C] time = 0.88, antiderivative size = 535, normalized size of antiderivative = 2.10, number of steps used = 28, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^3i(bc-ad)^3}+\frac{Bd^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^3i(bc-ad)^3}+\frac{d^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^3i(bc-ad)^3}-\frac{d^2\log(c+dx)\left(B\ldots\right.}{g^3i(bc\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^3*(c*i + d*i*x)),x]
```

```
[Out] -B/(4*(b*c - a*d)*g^3*i*(a + b*x)^2) + (3*B*d)/(2*(b*c - a*d)^2*g^3*i*(a +
b*x)) + (3*B*d^2*Log[a + b*x])/(2*(b*c - a*d)^3*g^3*i) - (B*d^2*Log[a + b*x
]^2)/(2*(b*c - a*d)^3*g^3*i) - (A + B*Log[(e*(a + b*x))/(c + d*x)])/(2*(b*c
 - a*d)*g^3*i*(a + b*x)^2) + (d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c
 - a*d)^2*g^3*i*(a + b*x)) + (d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c
+ d*x)]))/((b*c - a*d)^3*g^3*i) - (3*B*d^2*Log[c + d*x])/(2*(b*c - a*d)^3*g
^3*i) + (B*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)
^3*g^3*i) - (d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c -
 a*d)^3*g^3*i) - (B*d^2*Log[c + d*x]^2)/(2*(b*c - a*d)^3*g^3*i) + (B*d^2*Lo
g[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) + (B*d^2*P
olyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^3*i) + (B*d^2*Pol
yLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(37c+37dx)(ag+bgx)^3}\,dx = \int \left(\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{37(bc-ad)g^3(a+bx)^3} - \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{37(bc-ad)^2g^3(a+bx)^2} + \frac{bd^2\left(A+B\log\left(\frac{e(a}{c\right.}\right.}{37(bc-ad)^3g^3(a}\right.$$

$$= \frac{(bd^2)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}dx}{37(bc-ad)^3g^3} - \frac{d^3\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}dx}{37(bc-ad)^3g^3} - \frac{(bd)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2}dx}{37(bc-ad)^2g^3}$$

$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{74(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{37(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(A+B\right.}{37(bc-ad)^3}$$

$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{74(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{37(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(A+B\right.}{37(bc-ad)^3}$$

$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{74(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{37(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(A+B\right.}{37(bc-ad)^3}$$

$$= -\frac{B}{148(bc-ad)g^3(a+bx)^2} + \frac{3Bd}{74(bc-ad)^2g^3(a+bx)} + \frac{3Bd^2\log(a+bx)}{74(bc-ad)^3g^3} - $$

$$= -\frac{B}{148(bc-ad)g^3(a+bx)^2} + \frac{3Bd}{74(bc-ad)^2g^3(a+bx)} + \frac{3Bd^2\log(a+bx)}{74(bc-ad)^3g^3} - $$

$$= -\frac{B}{148(bc-ad)g^3(a+bx)^2} + \frac{3Bd}{74(bc-ad)^2g^3(a+bx)} + \frac{3Bd^2\log(a+bx)}{74(bc-ad)^3g^3} - $$

$$= -\frac{B}{148(bc-ad)g^3(a+bx)^2} + \frac{3Bd}{74(bc-ad)^2g^3(a+bx)} + \frac{3Bd^2\log(a+bx)}{74(bc-ad)^3g^3} - $$

Mathematica [C] time = 0.43, size = 418, normalized size = 1.64

$$4d^2(a+bx)^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) - 4d^2(a+bx)^2\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) - 2(bc-ad)^2 \left(\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^3*(c*i + d*i*
x)),x]
```

```
[Out] (-2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d*(b*c - a*d)*(a
 + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d^2*(a + b*x)^2*Log[a + b*
x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4*d^2*(a + b*x)^2*(A + B*Log[(e*(
a + b*x))/(c + d*x)])*Log[c + d*x] + 4*B*d*(a + b*x)*(b*c - a*d + d*(a + b*
x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - B*((b*c - a*d)^2 + 2*d*(-(b*c
) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log
[c + d*x]) - 2*B*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c
+ d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*B*d
^2*(a + b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c
+ d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(4*(b*c - a*d)^3*g^3*i*(
a + b*x)^2)
```

fricas [A] time = 0.65, size = 349, normalized size = 1.37

$$-\frac{(2A+B)b^2c^2 - 8(A+B)abcd + (6A+7B)a^2d^2 - 2\left(Bb^2d^2x^2 + 2Babd^2x + Ba^2d^2\right)\log\left(\frac{bex+ae}{dx+c}\right)^2 - 2\left((2A+3\right.}{4\left(\left(b^5c^3 - 3ab^4c^2d + 3a^2b^3cd^2 - a^3b^2d^3\right)g^3ix^2 + 2\left(ab^4c^3 - 3a^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i),x, algorit
hm="fricas")
```

```
[Out] -1/4*((2*A + B)*b^2*c^2 - 8*(A + B)*a*b*c*d + (6*A + 7*B)*a^2*d^2 - 2*(B*b^
2*d^2*x^2 + 2*B*a*b*d^2*x + B*a^2*d^2)*log((b*e*x + a*e)/(d*x + c))^2 - 2*(
(2*A + 3*B)*b^2*c*d - (2*A + 3*B)*a*b*d^2)*x - 2*((2*A + 3*B)*b^2*d^2*x^2 -
 B*b^2*c^2 + 4*B*a*b*c*d + 2*A*a^2*d^2 + 2*(B*b^2*c*d + 2*(A + B)*a*b*d^2)*
x)*log((b*e*x + a*e)/(d*x + c)))/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^
2 - a^3*b^2*d^3)*g^3*i*x^2 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^2*d + 3*a^3*b^2*c*d
^2 - a^4*b*d^3)*g^3*i*x + (a^2*b^3*c^3 - 3*a^3*b^2*c^2*d + 3*a^4*b*c*d^2 -
a^5*d^3)*g^3*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i),x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.05, size = 1040, normalized size = 4.08

$$\frac{Ba\,b^2d\,e^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\left(ad-bc\right)^4\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^2g^3i}-\frac{B\,b^3c\,e^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\left(ad-bc\right)^4\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^2g^3i}+\frac{Aa\,b^2d\,e^2}{2\left(ad-bc\right)^4\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^2g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3/(d*i*x+c*i),x)
```

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

maxima [B] time = 1.72, size = 885, normalized size = 3.47

$$\frac{1}{2}\,B\left(\frac{2\,bdx-bc+3\,ad}{\left(b^4c^2-2\,ab^3cd+a^2b^2d^2\right)g^3ix^2+2\left(ab^3c^2-2\,a^2b^2cd+a^3bd^2\right)g^3ix+\left(a^2b^2c^2-2\,a^3bcd+a^4d^2\right)g^3i}+\frac{}{\left(b^3c\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i),x, algorit
hm="maxima")
```

```
[Out] 1/2*B*((2*b*d*x - b*c + 3*a*d)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3*i
*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a^2*b^2*c^2 - 2
*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d
 + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i) - 2*d^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2
*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i))*log(b*e*x/(d*x + c) + a*e/(d*x +
c)) + 1/2*A*((2*b*d*x - b*c + 3*a*d)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)
*g^3*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a^2*b^2*c
^2 - 2*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2
*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i) - 2*d^2*log(d*x + c)/((b^3*c^3 - 3
*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i)) - 1/4*(b^2*c^2 - 8*a*b*c*d
+ 7*a^2*d^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a)^2 + 2*(b
^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(d*x + c)^2 - 6*(b^2*c*d - a*b*d^2)*
x - 6*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a) + 2*(3*b^2*d^2*x^2
 + 6*a*b*d^2*x + 3*a^2*d^2 - 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*
x + a))*log(d*x + c))*B/(a^2*b^3*c^3*g^3*i - 3*a^3*b^2*c^2*d*g^3*i + 3*a^4*
b*c*d^2*g^3*i - a^5*d^3*g^3*i + (b^5*c^3*g^3*i - 3*a*b^4*c^2*d*g^3*i + 3*a^
2*b^3*c*d^2*g^3*i - a^3*b^2*d^3*g^3*i)*x^2 + 2*(a*b^4*c^3*g^3*i - 3*a^2*b^3
*c^2*d*g^3*i + 3*a^3*b^2*c*d^2*g^3*i - a^4*b*d^3*g^3*i)*x)
```

mupad [B] time = 6.93, size = 545, normalized size = 2.14

$$\frac{3\,A\,a\,d}{2\,g^3\,i\,(a\,d-b\,c)^2\,(a+b\,x)^2}-\frac{B\,d^2\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2}{2\,g^3\,i\,(a\,d-b\,c)^3}-\frac{A\,b\,c}{2\,g^3\,i\,(a\,d-b\,c)^2\,(a+b\,x)^2}+\frac{7\,B\,a\,d}{4\,g^3\,i\,(a\,d-b\,c)^2\,(a+b\,x)^2}-\frac{}{4\,g^3\,i\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^3*(c*i + d*i*x)),x)
```

```
[Out] (A*d^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g^3*i*(a*d - b*c
)^3) + (B*d^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*3i)/(g^3*i*(a*
d - b*c)^3) - (B*d^2*log((e*(a + b*x))/(c + d*x))^2)/(2*g^3*i*(a*d - b*c)^3
) + (3*A*a*d)/(2*g^3*i*(a*d - b*c)^2*(a + b*x)^2) - (A*b*c)/(2*g^3*i*(a*d -
 b*c)^2*(a + b*x)^2) + (7*B*a*d)/(4*g^3*i*(a*d - b*c)^2*(a + b*x)^2) - (B*b
*c)/(4*g^3*i*(a*d - b*c)^2*(a + b*x)^2) + (3*B*a^2*d^2*log((e*(a + b*x))/(c
 + d*x)))/(2*g^3*i*(a*d - b*c)^3*(a + b*x)^2) + (B*b^2*c^2*log((e*(a + b*x)
)/(c + d*x)))/(2*g^3*i*(a*d - b*c)^3*(a + b*x)^2) + (A*b*d*x)/(g^3*i*(a*d -
 b*c)^2*(a + b*x)^2) + (3*B*b*d*x)/(2*g^3*i*(a*d - b*c)^2*(a + b*x)^2) + (B
*a*b*d^2*x*log((e*(a + b*x))/(c + d*x)))/(g^3*i*(a*d - b*c)^3*(a + b*x)^2)
- (B*b^2*c*d*x*log((e*(a + b*x))/(c + d*x)))/(g^3*i*(a*d - b*c)^3*(a + b*x)
^2) - (2*B*a*b*c*d*log((e*(a + b*x))/(c + d*x)))/(g^3*i*(a*d - b*c)^3*(a +
b*x)^2)
```

sympy [B] time = 6.98, size = 889, normalized size = 3.49

$$-\frac{Bd^2\log\left(\frac{e(a+bx)}{c+dx}\right)^2}{2a^3d^3g^3i-6a^2bcd^2g^3i+6ab^2c^2dg^3i-2b^3c^3g^3i}+\frac{d^2\,(2A+3B)\log\left(x+\frac{2Aad^3+2Abcd^2+3Bad^3+3Bbcd^2-\frac{a^4d^6(2A+3B)}{(ad-bc)^3}+\frac{4}{}}{}\right.}{2g^3i\,(ad-b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3/(d*i*x+c*i),x)
```

```
[Out] -B*d**2*log(e*(a + b*x)/(c + d*x))**2/(2*a**3*d**3*g**3*i - 6*a**2*b*c*d**2
*g**3*i + 6*a*b**2*c**2*d*g**3*i - 2*b**3*c**3*g**3*i) + d**2*(2*A + 3*B)*l
og(x + (2*A*a*d**3 + 2*A*b*c*d**2 + 3*B*a*d**3 + 3*B*b*c*d**2 - a**4*d**6*(
2*A + 3*B)/(a*d - b*c)**3 + 4*a**3*b*c*d**5*(2*A + 3*B)/(a*d - b*c)**3 - 6*
a**2*b**2*c**2*d**4*(2*A + 3*B)/(a*d - b*c)**3 + 4*a*b**3*c**3*d**3*(2*A +
3*B)/(a*d - b*c)**3 - b**4*c**4*d**2*(2*A + 3*B)/(a*d - b*c)**3)/(4*A*b*d**
3 + 6*B*b*d**3))/(2*g**3*i*(a*d - b*c)**3) - d**2*(2*A + 3*B)*log(x + (2*A*
a*d**3 + 2*A*b*c*d**2 + 3*B*a*d**3 + 3*B*b*c*d**2 + a**4*d**6*(2*A + 3*B)/(
a*d - b*c)**3 - 4*a**3*b*c*d**5*(2*A + 3*B)/(a*d - b*c)**3 + 6*a**2*b**2*c*
*2*d**4*(2*A + 3*B)/(a*d - b*c)**3 - 4*a*b**3*c**3*d**3*(2*A + 3*B)/(a*d -
b*c)**3 + b**4*c**4*d**2*(2*A + 3*B)/(a*d - b*c)**3)/(4*A*b*d**3 + 6*B*b*d*
*3))/(2*g**3*i*(a*d - b*c)**3) + (3*B*a*d - B*b*c + 2*B*b*d*x)*log(e*(a + b
*x)/(c + d*x))/(2*a**4*d**2*g**3*i - 4*a**3*b*c*d*g**3*i + 4*a**3*b*d**2*g*
*3*i*x + 2*a**2*b**2*c**2*g**3*i - 8*a**2*b**2*c*d*g**3*i*x + 2*a**2*b**2*d
**2*g**3*i*x**2 + 4*a*b**3*c**2*g**3*i*x - 4*a*b**3*c*d*g**3*i*x**2 + 2*b**
4*c**2*g**3*i*x**2) + (6*A*a*d - 2*A*b*c + 7*B*a*d - B*b*c + x*(4*A*b*d + 6
*B*b*d))/(4*a**4*d**2*g**3*i - 8*a**3*b*c*d*g**3*i + 4*a**2*b**2*c**2*g**3*
i + x**2*(4*a**2*b**2*d**2*g**3*i - 8*a*b**3*c*d*g**3*i + 4*b**4*c**2*g**3*
i) + x*(8*a**3*b*d**2*g**3*i - 16*a**2*b**2*c*d*g**3*i + 8*a*b**3*c**2*g**3
*i))
```

3.38 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^4(ci+dix)}\,dx$

Optimal. Leaf size=373

$$-\frac{b^3(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3g^4i(a+bx)^3(bc-ad)^4}+\frac{3b^2d(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^4i(a+bx)^2(bc-ad)^4}-\frac{d^3\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^4i(bc-ad)^4}-$$

```
[Out] -3*b*B*d^2*(d*x+c)/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/4*b^2*B*d*(d*x+c)^2/(-a*d+b
*c)^4/g^4/i/(b*x+a)^2-1/9*b^3*B*(d*x+c)^3/(-a*d+b*c)^4/g^4/i/(b*x+a)^3+1/2*
B*d^3*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^4/g^4/i-3*b*d^2*(d*x+c)*(A+B*ln(e*(b
*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/2*b^2*d*(d*x+c)^2*(A+B*ln(e*(b
*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-1/3*b^3*(d*x+c)^3*(A+B*ln(e*(b
*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-d^3*ln((b*x+a)/(d*x+c))*(A+B*l
n(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i
```

Rubi [C] time = 1.08, antiderivative size = 620, normalized size of antiderivative = 1.66, number of steps used = 32, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.275$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{Bd^3\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^4i(bc-ad)^4}-\frac{Bd^3\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^4i(bc-ad)^4}-\frac{d^3\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^4i(bc-ad)^4}+\frac{d^3\log(c+dx)\left(B\ldots\right.}{g^4i(b\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^4*(c*i + d*i*x)),x]
```

```
[Out] -B/(9*(b*c - a*d)*g^4*i*(a + b*x)^3) + (5*B*d)/(12*(b*c - a*d)^2*g^4*i*(a +
 b*x)^2) - (11*B*d^2)/(6*(b*c - a*d)^3*g^4*i*(a + b*x)) - (11*B*d^3*Log[a +
 b*x])/(6*(b*c - a*d)^4*g^4*i) + (B*d^3*Log[a + b*x]^2)/(2*(b*c - a*d)^4*g^
4*i) - (A + B*Log[(e*(a + b*x))/(c + d*x)])/(3*(b*c - a*d)*g^4*i*(a + b*x)^
3) + (d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*(b*c - a*d)^2*g^4*i*(a + b
*x)^2) - (d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^3*g^4*i*(a
 + b*x)) - (d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c -
a*d)^4*g^4*i) + (11*B*d^3*Log[c + d*x])/(6*(b*c - a*d)^4*g^4*i) - (B*d^3*Lo
g[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^4*g^4*i) + (d^3*
(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*d)^4*g^4*i) +
(B*d^3*Log[c + d*x]^2)/(2*(b*c - a*d)^4*g^4*i) - (B*d^3*Log[a + b*x]*Log[(b
*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*i) - (B*d^3*PolyLog[2, -((d*(a
 + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^4*i) - (B*d^3*PolyLog[2, (b*(c + d
*x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(38c+38dx)(ag+bgx)^4}\,dx = \int \left(\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{38(bc-ad)g^4(a+bx)^4} - \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{38(bc-ad)^2g^4(a+bx)^3} + \frac{bd^2\left(A+B\log\left(\frac{e(a}{c\cdot}\right.\right.}{38(bc-ad)^3g^4(a+}\right.$$

$$= -\frac{\left(bd^3\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}\,dx}{38(bc-ad)^4g^4} + \frac{d^4\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}\,dx}{38(bc-ad)^4g^4} + \frac{\left(bd^2\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2}}{38(bc-ad)^3g^4}$$

$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{114(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{76(bc-ad)^2g^4(a+bx)^2} - \frac{d^2\left(A+B\log\left(\frac{e(a+bx}{c+dx}\right.\right.}{38(bc-ad)^3g^4(a+b}$$

$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{114(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{76(bc-ad)^2g^4(a+bx)^2} - \frac{d^2\left(A+B\log\left(\frac{e(a+bx}{c+dx}\right.\right.}{38(bc-ad)^3g^4(a+b}$$

$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{114(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{76(bc-ad)^2g^4(a+bx)^2} - \frac{d^2\left(A+B\log\left(\frac{e(a+bx}{c+dx}\right.\right.}{38(bc-ad)^3g^4(a+b}$$

$$= -\frac{B}{342(bc-ad)g^4(a+bx)^3} + \frac{5Bd}{456(bc-ad)^2g^4(a+bx)^2} - \frac{11Bd^2}{228(bc-ad)^3g^4(a\cdot}$$

$$= -\frac{B}{342(bc-ad)g^4(a+bx)^3} + \frac{5Bd}{456(bc-ad)^2g^4(a+bx)^2} - \frac{11Bd^2}{228(bc-ad)^3g^4(a\cdot}$$

$$= -\frac{B}{342(bc-ad)g^4(a+bx)^3} + \frac{5Bd}{456(bc-ad)^2g^4(a+bx)^2} - \frac{11Bd^2}{228(bc-ad)^3g^4(a\cdot}$$

$$= -\frac{B}{342(bc-ad)g^4(a+bx)^3} + \frac{5Bd}{456(bc-ad)^2g^4(a+bx)^2} - \frac{11Bd^2}{228(bc-ad)^3g^4(a\cdot}$$

Mathematica [C] time = 0.71, size = 492, normalized size = 1.32

$$\frac{\frac{36Ad^2(ad-bc)}{a+bx} + \frac{18Ad(bc-ad)^2}{(a+bx)^2} - \frac{12A(bc-ad)^3}{(a+bx)^3} - 36Ad^3\log(a+bx) - 36Bd^3\log(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right) + 36Bd^3\log(c+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^4*(c*i + d*i*
x)),x]
```

```
[Out] ((-12*A*(b*c - a*d)^3)/(a + b*x)^3 - (4*B*(b*c - a*d)^3)/(a + b*x)^3 + (18*
A*d*(b*c - a*d)^2)/(a + b*x)^2 + (15*B*d*(b*c - a*d)^2)/(a + b*x)^2 + (36*A
*d^2*(-(b*c) + a*d))/(a + b*x) + (66*B*d^2*(-(b*c) + a*d))/(a + b*x) - 36*A
*d^3*Log[a + b*x] - 66*B*d^3*Log[a + b*x] + 18*B*d^3*Log[a + b*x]^2 - (12*B
*(b*c - a*d)^3*Log[(e*(a + b*x))/(c + d*x)])/(a + b*x)^3 + (18*B*d*(b*c - a
*d)^2*Log[(e*(a + b*x))/(c + d*x)])/(a + b*x)^2 + (36*B*d^2*(-(b*c) + a*d)*
Log[(e*(a + b*x))/(c + d*x)])/(a + b*x) - 36*B*d^3*Log[a + b*x]*Log[(e*(a +
 b*x))/(c + d*x)] + 36*A*d^3*Log[c + d*x] + 66*B*d^3*Log[c + d*x] - 36*B*d^
3*Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c + d*x] + 36*B*d^3*Log[(e*(a + b*x
))/(c + d*x)]*Log[c + d*x] + 18*B*d^3*Log[c + d*x]^2 - 36*B*d^3*Log[a + b*x
]*Log[(b*(c + d*x))/(b*c - a*d)] - 36*B*d^3*PolyLog[2, (d*(a + b*x))/(-(b*c
) + a*d)] - 36*B*d^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(36*(b*c - a*d)
^4*g^4*i)
```

fricas [A] time = 0.64, size = 611, normalized size = 1.64

$$-\frac{4\,(3\,A+B)b^3c^3-27\,(2\,A+B)ab^2c^2d+108\,(A+B)a^2bcd^2-(66\,A+85\,B)a^3d^3+6\left((6\,A+11\,B)b^3cd^2-(6\,A+\right.}{36\left(\left(b^7c^4-4\,ab^6c^3d\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i),x, algorit
hm="fricas")
```

```
[Out] -1/36*(4*(3*A + B)*b^3*c^3 - 27*(2*A + B)*a*b^2*c^2*d + 108*(A + B)*a^2*b*c
*d^2 - (66*A + 85*B)*a^3*d^3 + 6*((6*A + 11*B)*b^3*c*d^2 - (6*A + 11*B)*a*b
^2*d^3)*x^2 + 18*(B*b^3*d^3*x^3 + 3*B*a*b^2*d^3*x^2 + 3*B*a^2*b*d^3*x + B*a
^3*d^3)*log((b*e*x + a*e)/(d*x + c))^2 - 3*((6*A + 5*B)*b^3*c^2*d - 18*(2*A
 + 3*B)*a*b^2*c*d^2 + (30*A + 49*B)*a^2*b*d^3)*x + 6*((6*A + 11*B)*b^3*d^3*
x^3 + 2*B*b^3*c^3 - 9*B*a*b^2*c^2*d + 18*B*a^2*b*c*d^2 + 6*A*a^3*d^3 + 3*(2
*B*b^3*c*d^2 + 3*(2*A + 3*B)*a*b^2*d^3)*x^2 - 3*(B*b^3*c^2*d - 6*B*a*b^2*c*
d^2 - 6*(A + B)*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^7*c^4 - 4*a
*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^4*i*x^3 +
 3*(a*b^6*c^4 - 4*a^2*b^5*c^3*d + 6*a^3*b^4*c^2*d^2 - 4*a^4*b^3*c*d^3 + a^5
*b^2*d^4)*g^4*i*x^2 + 3*(a^2*b^5*c^4 - 4*a^3*b^4*c^3*d + 6*a^4*b^3*c^2*d^2
- 4*a^5*b^2*c*d^3 + a^6*b*d^4)*g^4*i*x + (a^3*b^4*c^4 - 4*a^4*b^3*c^3*d + 6
*a^5*b^2*c^2*d^2 - 4*a^6*b*c*d^3 + a^7*d^4)*g^4*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i),x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.05, size = 1474, normalized size = 3.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4/(d*i*x+c*i),x)
```

```
[Out] -d^4/i/(a*d-b*c)^5/g^4*A*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d^3/i/(a*d-b*c)^
5/g^4*A*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-3*d^3*e/i/(a*d-b*c)^5/g^4*A*b/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+3*d^2*e/i/(a*d-b*c)^5/g^4*A*b^2/(1
/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+3/2*d^2*e^2/i/(a*d-b*c)^5/g^4*A*b^2
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-3/2*d*e^2/i/(a*d-b*c)^5/g^4*A*
b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-1/3*d*e^3/i/(a*d-b*c)^5/g^4
*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+1/3*e^3/i/(a*d-b*c)^5/g^
4*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c-1/2*d^4/i/(a*d-b*c)^5/g
^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/2*d^3/i/(a*d-b*c)^5/g^4*B*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c-3*d^3*e/i/(a*d-b*c)^5/g^4*B*b/(1/(d*x+c)*a*
e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+3*d^2*e/i/(a*d
-b*c)^5/g^4*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)*c-3*d^3*e/i/(a*d-b*c)^5/g^4*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c
/d*e+b/d*e)*a+3*d^2*e/i/(a*d-b*c)^5/g^4*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)*c+3/2*d^2*e^2/i/(a*d-b*c)^5/g^4*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b
*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-3/2*d*e^2/i/(a*d-b*c)^5/g
^4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+
```

```
c)/d*e)*c+3/4*d^2*e^2/i/(a*d-b*c)^5/g^4*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)^2*a-3/4*d*e^2/i/(a*d-b*c)^5/g^4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b
*c/d*e+b/d*e)^2*c-1/3*d*e^3/i/(a*d-b*c)^5/g^4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c
)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/3*e^3/i/(a*d-b*c)^5/
g^4*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)*c-1/9*d*e^3/i/(a*d-b*c)^5/g^4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)^3*a+1/9*e^3/i/(a*d-b*c)^5/g^4*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)^3*c
```

maxima [B] time = 2.41, size = 1469, normalized size = 3.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i),x, algorit
hm="maxima")
```

```
[Out] -1/6*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d -
5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^
4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)*g
^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*
g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3)*g^4*i)
+ 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*
b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d +
6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i))*log(b*e*x/(d*x + c) +
a*e/(d*x + c)) - 1/6*A*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2
 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 -
 a^3*b^3*d^3)*g^4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2
- a^4*b^2*d^3)*g^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d
^2 - a^5*b*d^3)*g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 -
a^6*d^3)*g^4*i) + 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*
c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 -
4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i)) - 1/36
*(4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 - 85*a^3*d^3 + 66*(b^3*c*d^2
 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3
*d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x +
a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*b^2*c*d^2 + 49*a^2*b*d^3)*x
 + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a
) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*d^3*x + 11*a^3*d^3 - 6*
(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a))*log
(d*x + c))*B/(a^3*b^4*c^4*g^4*i - 4*a^4*b^3*c^3*d*g^4*i + 6*a^5*b^2*c^2*d^2
*g^4*i - 4*a^6*b*c*d^3*g^4*i + a^7*d^4*g^4*i + (b^7*c^4*g^4*i - 4*a*b^6*c^3
*d*g^4*i + 6*a^2*b^5*c^2*d^2*g^4*i - 4*a^3*b^4*c*d^3*g^4*i + a^4*b^3*d^4*g^
4*i)*x^3 + 3*(a*b^6*c^4*g^4*i - 4*a^2*b^5*c^3*d*g^4*i + 6*a^3*b^4*c^2*d^2*g
^4*i - 4*a^4*b^3*c*d^3*g^4*i + a^5*b^2*d^4*g^4*i)*x^2 + 3*(a^2*b^5*c^4*g^4*
i - 4*a^3*b^4*c^3*d*g^4*i + 6*a^4*b^3*c^2*d^2*g^4*i - 4*a^5*b^2*c*d^3*g^4*i
 + a^6*b*d^4*g^4*i)*x)
```

mupad [B] time = 9.51, size = 970, normalized size = 2.60

$$\frac{11\,A\,a^2\,d^2}{6\,g^4\,i\,(a\,d-b\,c)^3\,(a+b\,x)^3}-\frac{B\,d^3\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2}{2\,g^4\,i\,(a\,d-b\,c)^4}+\frac{A\,b^2\,c^2}{3\,g^4\,i\,(a\,d-b\,c)^3\,(a+b\,x)^3}+\frac{85\,B\,a^2\,d^2}{36\,g^4\,i\,(a\,d-b\,c)^3\,(a+b\,x)^3}+\frac{}{9\,g^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^4*(c*i + d*i*x)),x)
```

```
[Out] (A*d^3*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g^4*i*(a*d - b*c
)^4) + (B*d^3*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*11i)/(3*g^4*i*
```

```
(a*d - b*c)^4) - (B*d^3*log((e*(a + b*x))/(c + d*x))^2)/(2*g^4*i*(a*d - b*c
)^4) + (11*A*a^2*d^2)/(6*g^4*i*(a*d - b*c)^3*(a + b*x)^3) + (A*b^2*c^2)/(3*
g^4*i*(a*d - b*c)^3*(a + b*x)^3) + (85*B*a^2*d^2)/(36*g^4*i*(a*d - b*c)^3*(
a + b*x)^3) + (B*b^2*c^2)/(9*g^4*i*(a*d - b*c)^3*(a + b*x)^3) + (11*B*a^3*d
^3*log((e*(a + b*x))/(c + d*x)))/(6*g^4*i*(a*d - b*c)^4*(a + b*x)^3) - (B*b
^3*c^3*log((e*(a + b*x))/(c + d*x)))/(3*g^4*i*(a*d - b*c)^4*(a + b*x)^3) +
(A*b^2*d^2*x^2)/(g^4*i*(a*d - b*c)^3*(a + b*x)^3) + (11*B*b^2*d^2*x^2)/(6*g
^4*i*(a*d - b*c)^3*(a + b*x)^3) - (7*A*a*b*c*d)/(6*g^4*i*(a*d - b*c)^3*(a +
 b*x)^3) - (23*B*a*b*c*d)/(36*g^4*i*(a*d - b*c)^3*(a + b*x)^3) + (5*A*a*b*d
^2*x)/(2*g^4*i*(a*d - b*c)^3*(a + b*x)^3) + (49*B*a*b*d^2*x)/(12*g^4*i*(a*d
 - b*c)^3*(a + b*x)^3) - (A*b^2*c*d*x)/(2*g^4*i*(a*d - b*c)^3*(a + b*x)^3)
- (5*B*b^2*c*d*x)/(12*g^4*i*(a*d - b*c)^3*(a + b*x)^3) + (3*B*a*b^2*c^2*d*l
og((e*(a + b*x))/(c + d*x)))/(2*g^4*i*(a*d - b*c)^4*(a + b*x)^3) - (3*B*a^2
*b*c*d^2*log((e*(a + b*x))/(c + d*x)))/(g^4*i*(a*d - b*c)^4*(a + b*x)^3) +
(5*B*a^2*b*d^3*x*log((e*(a + b*x))/(c + d*x)))/(2*g^4*i*(a*d - b*c)^4*(a +
b*x)^3) + (B*b^3*c^2*d*x*log((e*(a + b*x))/(c + d*x)))/(2*g^4*i*(a*d - b*c)
^4*(a + b*x)^3) + (B*a*b^2*d^3*x^2*log((e*(a + b*x))/(c + d*x)))/(g^4*i*(a*
d - b*c)^4*(a + b*x)^3) - (B*b^3*c*d^2*x^2*log((e*(a + b*x))/(c + d*x)))/(g
^4*i*(a*d - b*c)^4*(a + b*x)^3) - (3*B*a*b^2*c*d^2*x*log((e*(a + b*x))/(c +
 d*x)))/(g^4*i*(a*d - b*c)^4*(a + b*x)^3)
```

sympy [B] time = 20.69, size = 1392, normalized size = 3.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4/(d*i*x+c*i),x)
```

```
[Out] -B*d**3*log(e*(a + b*x)/(c + d*x))**2/(2*a**4*d**4*g**4*i - 8*a**3*b*c*d**3
*g**4*i + 12*a**2*b**2*c**2*d**2*g**4*i - 8*a*b**3*c**3*d*g**4*i + 2*b**4*c
**4*g**4*i) + d**3*(6*A + 11*B)*log(x + (6*A*a*d**4 + 6*A*b*c*d**3 + 11*B*a
*d**4 + 11*B*b*c*d**3 - a**5*d**8*(6*A + 11*B)/(a*d - b*c)**4 + 5*a**4*b*c*
d**7*(6*A + 11*B)/(a*d - b*c)**4 - 10*a**3*b**2*c**2*d**6*(6*A + 11*B)/(a*d
 - b*c)**4 + 10*a**2*b**3*c**3*d**5*(6*A + 11*B)/(a*d - b*c)**4 - 5*a*b**4*
c**4*d**4*(6*A + 11*B)/(a*d - b*c)**4 + b**5*c**5*d**3*(6*A + 11*B)/(a*d -
b*c)**4)/(12*A*b*d**4 + 22*B*b*d**4))/(6*g**4*i*(a*d - b*c)**4) - d**3*(6*A
 + 11*B)*log(x + (6*A*a*d**4 + 6*A*b*c*d**3 + 11*B*a*d**4 + 11*B*b*c*d**3 +
 a**5*d**8*(6*A + 11*B)/(a*d - b*c)**4 - 5*a**4*b*c*d**7*(6*A + 11*B)/(a*d
- b*c)**4 + 10*a**3*b**2*c**2*d**6*(6*A + 11*B)/(a*d - b*c)**4 - 10*a**2*b*
*3*c**3*d**5*(6*A + 11*B)/(a*d - b*c)**4 + 5*a*b**4*c**4*d**4*(6*A + 11*B)/
(a*d - b*c)**4 - b**5*c**5*d**3*(6*A + 11*B)/(a*d - b*c)**4)/(12*A*b*d**4 +
 22*B*b*d**4))/(6*g**4*i*(a*d - b*c)**4) + (11*B*a**2*d**2 - 7*B*a*b*c*d +
15*B*a*b*d**2*x + 2*B*b**2*c**2 - 3*B*b**2*c*d*x + 6*B*b**2*d**2*x**2)*log(
e*(a + b*x)/(c + d*x))/(6*a**6*d**3*g**4*i - 18*a**5*b*c*d**2*g**4*i + 18*a
**5*b*d**3*g**4*i*x + 18*a**4*b**2*c**2*d*g**4*i - 54*a**4*b**2*c*d**2*g**4
*i*x + 18*a**4*b**2*d**3*g**4*i*x**2 - 6*a**3*b**3*c**3*g**4*i + 54*a**3*b*
*3*c**2*d*g**4*i*x - 54*a**3*b**3*c*d**2*g**4*i*x**2 + 6*a**3*b**3*d**3*g**
4*i*x**3 - 18*a**2*b**4*c**3*g**4*i*x + 54*a**2*b**4*c**2*d*g**4*i*x**2 - 1
8*a**2*b**4*c*d**2*g**4*i*x**3 - 18*a*b**5*c**3*g**4*i*x**2 + 18*a*b**5*c**
2*d*g**4*i*x**3 - 6*b**6*c**3*g**4*i*x**3) + (66*A*a**2*d**2 - 42*A*a*b*c*d
 + 12*A*b**2*c**2 + 85*B*a**2*d**2 - 23*B*a*b*c*d + 4*B*b**2*c**2 + x**2*(3
6*A*b**2*d**2 + 66*B*b**2*d**2) + x*(90*A*a*b*d**2 - 18*A*b**2*c*d + 147*B*
a*b*d**2 - 15*B*b**2*c*d))/(36*a**6*d**3*g**4*i - 108*a**5*b*c*d**2*g**4*i
+ 108*a**4*b**2*c**2*d*g**4*i - 36*a**3*b**3*c**3*g**4*i + x**3*(36*a**3*b*
*3*d**3*g**4*i - 108*a**2*b**4*c*d**2*g**4*i + 108*a*b**5*c**2*d*g**4*i - 3
6*b**6*c**3*g**4*i) + x**2*(108*a**4*b**2*d**3*g**4*i - 324*a**3*b**3*c*d**
2*g**4*i + 324*a**2*b**4*c**2*d*g**4*i - 108*a*b**5*c**3*g**4*i) + x*(108*a
**5*b*d**3*g**4*i - 324*a**4*b**2*c*d**2*g**4*i + 324*a**3*b**3*c**2*d*g**4
*i - 108*a**2*b**4*c**3*g**4*i))
```

3.39 $\int \frac{(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ci+dix)^2}\,dx$

Optimal. Leaf size=341

$$-\frac{bg^3(bc-ad)^2\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(6B\log\left(\frac{e(a+bx)}{c+dx}\right)+6A+5B\right)}{2d^4i^2}-\frac{g^3(6A+5B)(a+bx)(bc-ad)^2}{2d^3i^2(c+dx)}-\frac{g^3(a+bx)^2(bc-a}{}$$

```
[Out] 3*B*(-a*d+b*c)^2*g^3*(b*x+a)/d^3/i^2/(d*x+c)-1/2*(6*A+5*B)*(-a*d+b*c)^2*g^3
*(b*x+a)/d^3/i^2/(d*x+c)-3*B*(-a*d+b*c)^2*g^3*(b*x+a)*ln(e*(b*x+a)/(d*x+c))
/d^3/i^2/(d*x+c)+1/2*g^3*(b*x+a)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/d/i^2/(d*x+c
)-1/2*(-a*d+b*c)*g^3*(b*x+a)^2*(3*A+B+3*B*ln(e*(b*x+a)/(d*x+c)))/d^2/i^2/(d
*x+c)-1/2*b*(-a*d+b*c)^2*g^3*ln((-a*d+b*c)/b/(d*x+c))*(6*A+5*B+6*B*ln(e*(b*
x+a)/(d*x+c)))/d^4/i^2-3*b*B*(-a*d+b*c)^2*g^3*polylog(2,d*(b*x+a)/b/(d*x+c)
)/d^4/i^2
```

Rubi [A] time = 0.73, antiderivative size = 519, normalized size of antiderivative = 1.52, number of steps used = 22, number of rules used = 14, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {2528, 2486, 31, 2525, 12, 72, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{3bBg^3(bc-ad)^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^4i^2}-\frac{a^2bBg^3\log(a+bx)}{2d^2i^2}+\frac{b^3g^3x^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2d^2i^2}-\frac{Ab^2g^3x(2bc-3ad}{d^3i^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^2,
x]
```

```
[Out] -((A*b^2*(2*b*c - 3*a*d)*g^3*x)/(d^3*i^2)) - (b^2*B*(b*c - a*d)*g^3*x)/(2*d
^3*i^2) - (B*(b*c - a*d)^3*g^3)/(d^4*i^2*(c + d*x)) - (a^2*b*B*g^3*Log[a +
b*x])/(2*d^2*i^2) - (b*B*(b*c - a*d)^2*g^3*Log[a + b*x])/(d^4*i^2) - (b*B*(
2*b*c - 3*a*d)*g^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(d^3*i^2) + (b^3
*g^3*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*d^2*i^2) + ((b*c - a*d)^3
*g^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^4*i^2*(c + d*x)) + (b^3*B*c^2
*g^3*Log[c + d*x])/(2*d^4*i^2) + (b*B*(2*b*c - 3*a*d)*(b*c - a*d)*g^3*Log[c
 + d*x])/(d^4*i^2) + (b*B*(b*c - a*d)^2*g^3*Log[c + d*x])/(d^4*i^2) - (3*b*
B*(b*c - a*d)^2*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4*i^
2) + (3*b*(b*c - a*d)^2*g^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*
x])/(d^4*i^2) + (3*b*B*(b*c - a*d)^2*g^3*Log[c + d*x]^2)/(2*d^4*i^2) - (3*b
*B*(b*c - a*d)^2*g^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(39c+39dx)^2}\,dx = \int\left(-\frac{b^2(2bc-3ad)g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1521d^3}+\frac{b^3g^3x\left(A+B\log\left(\frac{e(a}{c-}\right.\right.}{1521d^2}\right.$$

$$=\frac{\left(b^3g^3\right)\int x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{1521d^2}-\frac{\left(b^2(2bc-3ad)g^3\right)\int\left(A+B\,\mathrm{l}\right.}{1521d^3}$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{1521d^3}+\frac{b^3g^3x^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3042d^2}+\frac{(bc-ad)^3g^3}{15}$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{1521d^3}-\frac{bB(2bc-3ad)g^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{1521d^3}+\frac{b^3g}{}$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{1521d^3}-\frac{bB(2bc-3ad)g^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{1521d^3}+\frac{b^3g}{}$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{1521d^3}-\frac{b^2B(bc-ad)g^3x}{3042d^3}-\frac{B(bc-ad)^3g^3}{1521d^4(c+dx)}-\frac{a^2bBg}{3}$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{1521d^3}-\frac{b^2B(bc-ad)g^3x}{3042d^3}-\frac{B(bc-ad)^3g^3}{1521d^4(c+dx)}-\frac{a^2bBg}{3}$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{1521d^3}-\frac{b^2B(bc-ad)g^3x}{3042d^3}-\frac{B(bc-ad)^3g^3}{1521d^4(c+dx)}-\frac{a^2bBg}{3}$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{1521d^3}-\frac{b^2B(bc-ad)g^3x}{3042d^3}-\frac{B(bc-ad)^3g^3}{1521d^4(c+dx)}-\frac{a^2bBg}{3}$$

Mathematica [A] time = 0.42, size = 359, normalized size = 1.05

$$g^3\left(bB\left(b\left(dx(ad-bc)+bc^2\log(c+dx)\right)-a^2d^2\log(a+bx)\right)+b^3d^2x^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-2Ab^2dx(2bc-3\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i
*x)^2,x]
```

```
[Out] (g^3*(-2*A*b^2*d*(2*b*c - 3*a*d)*x - 2*b*B*d*(2*b*c - 3*a*d)*(a + b*x)*Log[
(e*(a + b*x))/(c + d*x)] + b^3*d^2*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])
 + (2*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c + d*x) + 2*b*B
*(2*b*c - 3*a*d)*(b*c - a*d)*Log[c + d*x] + 6*b*(b*c - a*d)^2*(A + B*Log[(e
*(a + b*x))/(c + d*x)])*Log[c + d*x] - 2*B*(b*c - a*d)^2*((b*c - a*d)/(c +
d*x) + b*Log[a + b*x] - b*Log[c + d*x]) + b*B*(-(a^2*d^2*Log[a + b*x]) + b*
(d*(-(b*c) + a*d)*x + b*c^2*Log[c + d*x])) - 3*b*B*(b*c - a*d)^2*((2*Log[(d
*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*
(c + d*x))/(b*c - a*d)])))/(2*d^4*i^2)
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ab^3g^3x^3 + 3\,Aab^2g^3x^2 + 3\,Aa^2bg^3x + Aa^3g^3 + \left(Bb^3g^3x^3 + 3\,Bab^2g^3x^2 + 3\,Ba^2bg^3x + Ba^3g^3\right)\log\left(\frac{bex+}{dx+}\right.}{d^2i^2x^2 + 2\,cdi^2x + c^2i^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algor
ithm="fricas")
```

```
[Out] integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 +
 (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log((b*e
*x + a*e)/(d*x + c)))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.16, size = 2973, normalized size = 8.72

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^2,x)
```

```
[Out] 9/d^3*e*B*g^3/i^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d
*x+c)*b*c*e)*c^2/(d*x+c)*a+1/d*B*g^3/i^2*a^3/(d*x+c)-1/d*A*g^3/i^2*a^3/(d*x
+c)+2/d*e^2*B*g^3/i^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)^2*a^3/(d*x+c)^2*c-3/d^2*e^2*B*g^3/i^2*b^3*ln(b/d*e+(a*d-b*
c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2/(d*x+c)^2*c^2+2/d^3
*e^2*B*g^3/i^2*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+
c)*b*c*e)^2*a/(d*x+c)^2*c^3-9/d^2*e*B*g^3/i^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c/(d*x+c)*a^2-3/d^4*A*g^3/i^2*b^3*
ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2-3/d^2*A*g^3/i^2*b*ln(-b*e+(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2-1/d*B*g^3/i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)*a^3/(d*x+c)-1/d^4*B*g^3/i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c^2-1/d
^2*B*g^3/i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a^2*b-5/2/d^4*B*g^3/i^2*b^3*ln
(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c^2-3/d^4*B*g^3/i^2*b^3*dilog(-(-b*e
+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c^2-5/2/d^2*B*g^3/i^2*b*ln(-b*e+(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a^2-3/d^2*B*g^3/i^2*b*dilog(-(-b*e+(b/d*e+(a*d
```

```
-b*c)/(d*x+c)/d*e)*d)/b/e)*a^2-2/d^3*B*g^3/i^2*a*b^2*c+2/d^3*A*g^3/i^2*b^2*
a*c-3/d^4*e*B*g^3/i^2*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)*c^3/(d*x+c)-6/d^3*e*B*g^3/i^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*c+3/d*e*B*g^3/i^2*b*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^3/(d*x+c)-1/2/d^4*
e^2*B*g^3/i^2*b^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c
)*b*c*e)^2*c^4/(d*x+c)^2-1/d^3*e^2*B*g^3/i^2*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a*c+1/d^2*B*g^3/i^2*a^2*b-1/d^2*A
*g^3/i^2*b*a^2-1/d^4*A*g^3/i^2*b^3*c^2+3/d^2*B*g^3/i^2*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*b*c/(d*x+c)*a^2-3/d^3*B*g^3/i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
*b^2*c^2/(d*x+c)*a-1/2*e^2*B*g^3/i^2*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(
d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^4/(d*x+c)^2+6/d^3*B*g^3/i^2*b^2*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a*c+
1/2/d^4*e^2*B*g^3/i^2*b^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-
1/(d*x+c)*b*c*e)^2*c^2+3/d^2*e*B*g^3/i^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2+3/d^4*e*B*g^3/i^2*b^4*ln(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2+1/2/d^2*e^2*B*g^3/
i^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2
*a^2-6/d^3*e*A*g^3/i^2*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a*c-1/d^3*e*B*
g^3/i^2*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c*a-1/d^3*e^2*A*g^3/i^2*b^4/(
1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c*a-3/d^4*B*g^3/i^2*b^3*ln(b/d*e+(a*d-b*
c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c^2+2/d^3*B
*g^3/i^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c*a+1/d^4*B*g^3/i^2*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)*b^3*c^3/(d*x+c)+5/d^3*B*g^3/i^2*b^2*ln(-b*e+(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)*d)*c*a+6/d^3*B*g^3/i^2*b^2*dilog(-(-b*e+(b/d*e+(a*d-b*
c)/(d*x+c)/d*e)*d)/b/e)*c*a+6/d^3*A*g^3/i^2*b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d
*x+c)/d*e)*d)*a*c-3/d^2*B*g^3/i^2*b*c/(d*x+c)*a^2+1/2/d^4*e^2*A*g^3/i^2*b^5
/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*c^2+3/d^3*B*g^3/i^2*b^2*c^2/(d*x+c)*a+
3/d^2*A*g^3/i^2*b*c/(d*x+c)*a^2-3/d^3*A*g^3/i^2*b^2*c^2/(d*x+c)*a+1/2/d^2*e
^2*A*g^3/i^2*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)^2*a^2+3/d^2*e*A*g^3/i^2*
b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a^2+1/2/d^4*e*B*g^3/i^2*b^4/(1/(d*x+c
)*a*d*e-1/(d*x+c)*b*c*e)*c^2+1/2/d^2*e*B*g^3/i^2*b^2/(1/(d*x+c)*a*d*e-1/(d*
x+c)*b*c*e)*a^2+3/d^4*e*A*g^3/i^2*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c^2
-3/d^2*B*g^3/i^2*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*
c)/(d*x+c)/d*e)*d)/b/e)*a^2+1/d^4*B*g^3/i^2*b^3*c^2+1/d^4*A*g^3/i^2*b^3*c^3
/(d*x+c)-1/d^4*B*g^3/i^2*b^3*c^3/(d*x+c)
```

maxima [B] time = 1.89, size = 1341, normalized size = 3.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algor
ithm="maxima")
```

```
[Out] 1/2*(2*c^3/(d^5*i^2*x + c*d^4*i^2) + 6*c^2*log(d*x + c)/(d^4*i^2) + (d*x^2
- 4*c*x)/(d^3*i^2))*A*b^3*g^3 - 3*A*a*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/
(d^2*i^2) + 2*c*log(d*x + c)/(d^3*i^2))*g^3 + 3*A*a^2*b*g^3*(c/(d^3*i^2*x +
 c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - B*a^3*g^3*(log(b*e*x/(d*x + c) + a*
e/(d*x + c))/(d^2*i^2*x + c*d*i^2) - 1/(d^2*i^2*x + c*d*i^2) - b*log(b*x +
a)/((b*c*d - a*d^2)*i^2) + b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A*a^3*g^
3/(d^2*i^2*x + c*d*i^2) - 1/2*(6*a^3*b*d^3*g^3*log(e) - (6*g^3*log(e) + 7*g
^3)*b^4*c^3 + (18*g^3*log(e) + 17*g^3)*a*b^3*c^2*d - 6*(3*g^3*log(e) + 2*g^
3)*a^2*b^2*c*d^2)*B*log(d*x + c)/(b*c*d^4*i^2 - a*d^5*i^2) + 1/2*((b^4*c*d^
3*g^3*log(e) - a*b^3*d^4*g^3*log(e))*B*x^3 - ((3*g^3*log(e) + g^3)*b^4*c^2*
d^2 - (9*g^3*log(e) + 2*g^3)*a*b^3*c*d^3 + (6*g^3*log(e) + g^3)*a^2*b^2*d^4
)*B*x^2 - ((4*g^3*log(e) + g^3)*b^4*c^3*d - 2*(5*g^3*log(e) + g^3)*a*b^3*c^
2*d^2 + (6*g^3*log(e) + g^3)*a^2*b^2*c*d^3)*B*x - 3*((b^4*c^3*d*g^3 - 3*a*b
^3*c^2*d^2*g^3 + 3*a^2*b^2*c*d^3*g^3 - a^3*b*d^4*g^3)*B*x + (b^4*c^4*g^3 -
3*a*b^3*c^3*d*g^3 + 3*a^2*b^2*c^2*d^2*g^3 - a^3*b*c*d^3*g^3)*B)*log(d*x + c
```

```
)^2 + 2*((g^3*log(e) - g^3)*b^4*c^4 - 4*(g^3*log(e) - g^3)*a*b^3*c^3*d + 6*
(g^3*log(e) - g^3)*a^2*b^2*c^2*d^2 - 3*(g^3*log(e) - g^3)*a^3*b*c*d^3)*B +
((b^4*c*d^3*g^3 - a*b^3*d^4*g^3)*B*x^3 - 3*(b^4*c^2*d^2*g^3 - 3*a*b^3*c*d^3
*g^3 + 2*a^2*b^2*d^4*g^3)*B*x^2 - (6*b^4*c^3*d*g^3 - 12*a*b^3*c^2*d^2*g^3 +
 3*a^2*b^2*c*d^3*g^3 + 5*a^3*b*d^4*g^3)*B*x - (6*a*b^3*c^3*d*g^3 - 15*a^2*b
^2*c^2*d^2*g^3 + 11*a^3*b*c*d^3*g^3)*B)*log(b*x + a) - ((b^4*c*d^3*g^3 - a*
b^3*d^4*g^3)*B*x^3 - 3*(b^4*c^2*d^2*g^3 - 3*a*b^3*c*d^3*g^3 + 2*a^2*b^2*d^4
*g^3)*B*x^2 - 2*(2*b^4*c^3*d*g^3 - 5*a*b^3*c^2*d^2*g^3 + 3*a^2*b^2*c*d^3*g^
3)*B*x + 2*(b^4*c^4*g^3 - 4*a*b^3*c^3*d*g^3 + 6*a^2*b^2*c^2*d^2*g^3 - 3*a^3
*b*c*d^3*g^3)*B)*log(d*x + c))/(b*c^2*d^4*i^2 - a*c*d^5*i^2 + (b*c*d^5*i^2
- a*d^6*i^2)*x) + 3*(b^3*c^2*g^3 - 2*a*b^2*c*d*g^3 + a^2*b*d^2*g^3)*(log(b*
x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d
)))*B/(d^4*i^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)^3\,\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}{{\left(c\,i+d\,i\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2,
x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.40 $\int \frac{(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ci+dix)^2}\,dx$

Optimal. Leaf size=260

$$\frac{bg^2(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(2B\log\left(\frac{e(a+bx)}{c+dx}\right)+2A+B\right)}{d^3i^2}+\frac{g^2(2A+B)(a+bx)(bc-ad)}{d^2i^2(c+dx)}+\frac{g^2(a+bx)^2\left(B\log\left(\frac{e(a+b}{c+d}\right.\right.}{di^2(c+dx)}$$

```
[Out] -2*B*(-a*d+b*c)*g^2*(b*x+a)/d^2/i^2/(d*x+c)+(2*A+B)*(-a*d+b*c)*g^2*(b*x+a)/
d^2/i^2/(d*x+c)+2*B*(-a*d+b*c)*g^2*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/d^2/i^2/(d
*x+c)+g^2*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/d/i^2/(d*x+c)+b*(-a*d+b*c)*
g^2*ln((-a*d+b*c)/b/(d*x+c))*(2*A+B+2*B*ln(e*(b*x+a)/(d*x+c)))/d^3/i^2+2*b*
B*(-a*d+b*c)*g^2*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i^2
```

Rubi [A] time = 0.53, antiderivative size = 336, normalized size of antiderivative = 1.29, number of steps used = 18, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{2bBg^2(bc-ad)\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^3i^2}-\frac{g^2(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^3i^2(c+dx)}-\frac{2bg^2(bc-ad)\log(c+dx)\left(B\log\left(\frac{e(a-}{c+}\right.\right.}{d^3i^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^2,
x]
```

```
[Out] (A*b^2*g^2*x)/(d^2*i^2) + (B*(b*c - a*d)^2*g^2)/(d^3*i^2*(c + d*x)) + (b*B*
(b*c - a*d)*g^2*Log[a + b*x])/(d^3*i^2) + (b*B*g^2*(a + b*x)*Log[(e*(a + b*
x))/(c + d*x)])/(d^2*i^2) - ((b*c - a*d)^2*g^2*(A + B*Log[(e*(a + b*x))/(c
+ d*x)]))/(d^3*i^2*(c + d*x)) - (2*b*B*(b*c - a*d)*g^2*Log[c + d*x])/(d^3*i
^2) + (2*b*B*(b*c - a*d)*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]
)/(d^3*i^2) - (2*b*(b*c - a*d)*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log
[c + d*x])/(d^3*i^2) - (b*B*(b*c - a*d)*g^2*Log[c + d*x]^2)/(d^3*i^2) + (2*
b*B*(b*c - a*d)*g^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(40c+40dx)^2}\,dx = \int\left(\frac{b^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1600d^2}+\frac{(-bc+ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right.}{1600d^2(c+dx)^2}\right.$$

$$=\frac{\left(b^2g^2\right)\int\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{1600d^2}-\frac{\left(b(bc-ad)g^2\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}}{800d^2}$$

$$=\frac{Ab^2g^2x}{1600d^2}-\frac{(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1600d^3(c+dx)}-\frac{b(bc-ad)g^2\left(A+B\right.}{}$$

$$=\frac{Ab^2g^2x}{1600d^2}+\frac{bBg^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{1600d^2}-\frac{(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a}{c}\right.\right.}{1600d^3(c+dx)}$$

$$=\frac{Ab^2g^2x}{1600d^2}+\frac{bBg^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{1600d^2}-\frac{(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a}{c}\right.\right.}{1600d^3(c+dx)}$$

$$=\frac{Ab^2g^2x}{1600d^2}+\frac{B(bc-ad)^2g^2}{1600d^3(c+dx)}+\frac{bB(bc-ad)g^2\log(a+bx)}{1600d^3}+\frac{bBg^2(a+}{}$$

$$=\frac{Ab^2g^2x}{1600d^2}+\frac{B(bc-ad)^2g^2}{1600d^3(c+dx)}+\frac{bB(bc-ad)g^2\log(a+bx)}{1600d^3}+\frac{bBg^2(a+}{}$$

$$=\frac{Ab^2g^2x}{1600d^2}+\frac{B(bc-ad)^2g^2}{1600d^3(c+dx)}+\frac{bB(bc-ad)g^2\log(a+bx)}{1600d^3}+\frac{bBg^2(a+}{}$$

$$=\frac{Ab^2g^2x}{1600d^2}+\frac{B(bc-ad)^2g^2}{1600d^3(c+dx)}+\frac{bB(bc-ad)g^2\log(a+bx)}{1600d^3}+\frac{bBg^2(a+}{}$$

Mathematica [A] time = 0.24, size = 239, normalized size = 0.92

$$\frac{g^2\left(-2b(bc-ad)\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-\frac{(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{c+dx}+bBd(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)+bB(bc\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i
*x)^2,x]
```

```
[Out] (g^2*(A*b^2*d*x + (B*(b*c - a*d)^2)/(c + d*x) + b*B*(b*c - a*d)*Log[a + b*x
] + b*B*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - ((b*c - a*d)^2*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]))/(c + d*x) - 2*b*B*(b*c - a*d)*Log[c + d*x] - 2
*b*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + b*B*(b*c
 - a*d)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x]
+ 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(d^3*i^2)
```

fricas [F] time = 1.07, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ab^2g^2x^2+2\,Aabg^2x+Aa^2g^2+\left(Bb^2g^2x^2+2\,Babg^2x+Ba^2g^2\right)\log\left(\frac{bex+ae}{dx+c}\right)}{d^2i^2x^2+2\,cdi^2x+c^2i^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algor
ithm="fricas")
```

```
[Out] integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*
a*b*g^2*x + B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/(d^2*i^2*x^2 + 2*c*d*i
^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.14, size = 1382, normalized size = 5.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^2,x)
```

```
[Out] -2*e/d^2*g^2/i^2*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(
d*x+c)*b*c*e)/(d*x+c)*a*c+2/d^2*g^2/i^2*A/(d*x+c)*a*b*c-1/d^3*g^2/i^2*B*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+2/d^3*g^2/i^2*B*b^2*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c-2/d
^2*g^2/i^2*B*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*d)/b/e)*a+e/d^2*g^2/i^2*A*b^2/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)
*a-e/d^3*g^2/i^2*A*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c-2/d^2*g^2/i^2*B/
(d*x+c)*a*b*c+e/d^2*g^2/i^2*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c
)*a*d*e-1/(d*x+c)*b*c*e)*a+2/d^2*g^2/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/
(d*x+c)*a*b*c-e/d^3*g^2/i^2*B*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c
)*a*d*e-1/(d*x+c)*b*c*e)*c-1/d*g^2/i^2*A/(d*x+c)*a^2+1/d*g^2/i^2*B/(d*x+c)*
a^2+1/d^3*g^2/i^2*B/(d*x+c)*b^2*c^2-1/d^3*g^2/i^2*A/(d*x+c)*b^2*c^2+1/d^3*g
^2/i^2*B*b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-1/d^2*g^2/i^2*B*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a-1/d^2*g^2/i^2*B*b*ln(-b*e+(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)*d)*a+1/d^3*g^2/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-1/
d*g^2/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2-2/d^2*g^2/i^2*B*b*d
ilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+2/d^3*g^2/i^2*B*b^2*dil
og(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c+2/d^3*g^2/i^2*A*b^2*ln(-b
*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-2/d^2*g^2/i^2*A*b*ln(-b*e+(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)*d)*a+e/d*g^2/i^2*B*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/
(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a^2+e/d^3*g^2/i^2*B*b^3*ln(b/d*e+(a*
d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*c^2-1/d^2*g^2
/i^2*A*b*a+1/d^3*g^2/i^2*A*b^2*c+1/d^2*g^2/i^2*B*b*a-1/d^3*g^2/i^2*B*b^2*c
```

maxima [B] time = 1.90, size = 886, normalized size = 3.41

$$-Ab^2\left(\frac{c^2}{d^4i^2x+cd^3i^2}-\frac{x}{d^2i^2}+\frac{2\,c\log\left(dx+c\right)}{d^3i^2}\right)g^2+2\,Aabg^2\left(\frac{c}{d^3i^2x+cd^2i^2}+\frac{\log\left(dx+c\right)}{d^2i^2}\right)-Ba^2g^2\left(\frac{\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+\cdots}\right)}{d^2i^2x+cdi^2\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algor
ithm="maxima")
```

```
[Out] -A*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/(d^2*i^2) + 2*c*log(d*x + c)/(d^3*i
^2))*g^2 + 2*A*a*b*g^2*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2))
 - B*a^2*g^2*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d*i^2) -
1/(d^2*i^2*x + c*d*i^2) - b*log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*log(d*x
+ c)/((b*c*d - a*d^2)*i^2)) - A*a^2*g^2/(d^2*i^2*x + c*d*i^2) - (2*a^2*b*d^
2*g^2*log(e) + 2*(g^2*log(e) + g^2)*b^3*c^2 - (4*g^2*log(e) + 3*g^2)*a*b^2*
c*d)*B*log(d*x + c)/(b*c*d^3*i^2 - a*d^4*i^2) + ((b^3*c*d^2*g^2*log(e) - a*
b^2*d^3*g^2*log(e))*B*x^2 + (b^3*c^2*d*g^2*log(e) - a*b^2*c*d^2*g^2*log(e))
*B*x + ((b^3*c^2*d*g^2 - 2*a*b^2*c*d^2*g^2 + a^2*b*d^3*g^2)*B*x + (b^3*c^3*
g^2 - 2*a*b^2*c^2*d*g^2 + a^2*b*c*d^2*g^2)*B)*log(d*x + c)^2 - ((g^2*log(e)
 - g^2)*b^3*c^3 - 3*(g^2*log(e) - g^2)*a*b^2*c^2*d + 2*(g^2*log(e) - g^2)*a
^2*b*c*d^2)*B + ((b^3*c*d^2*g^2 - a*b^2*d^3*g^2)*B*x^2 + (2*b^3*c^2*d*g^2 -
 2*a*b^2*c*d^2*g^2 - a^2*b*d^3*g^2)*B*x + (2*a*b^2*c^2*d*g^2 - 3*a^2*b*c*d^
2*g^2)*B)*log(b*x + a) - ((b^3*c*d^2*g^2 - a*b^2*d^3*g^2)*B*x^2 + (b^3*c^2*
d*g^2 - a*b^2*c*d^2*g^2)*B*x - (b^3*c^3*g^2 - 3*a*b^2*c^2*d*g^2 + 2*a^2*b*c
*d^2*g^2)*B)*log(d*x + c))/(b*c^2*d^3*i^2 - a*c*d^4*i^2 + (b*c*d^4*i^2 - a*
d^5*i^2)*x) - 2*(b^2*c*g^2 - a*b*d*g^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*
c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^3*i^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^2\,\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}{{\left(c\,i+d\,i\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2,
x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.41 $\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ci+dix)^2}\,dx$

Optimal. Leaf size=160

$$-\frac{bg\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i^2}-\frac{Ag(a+bx)}{di^2(c+dx)}-\frac{bBg\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)}{d^2i^2}-\frac{Bg(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{di^2(c+dx)}+\frac{Bg(a+bx)}{di^2(c+dx)}$$

```
[Out] -A*g*(b*x+a)/d/i^2/(d*x+c)+B*g*(b*x+a)/d/i^2/(d*x+c)-B*g*(b*x+a)*ln(e*(b*x+
a)/(d*x+c))/d/i^2/(d*x+c)-b*g*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d
*x+c)))/d^2/i^2-b*B*g*polylog(2,d*(b*x+a)/b/(d*x+c))/d^2/i^2
```

Rubi [A] time = 0.40, antiderivative size = 222, normalized size of antiderivative = 1.39, number of steps used = 15, number of rules used = 11, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.290, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{bBg\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^2i^2}+\frac{bg\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i^2}+\frac{g(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i^2(c+dx)}-\frac{Bg(bc-ad)}{d^2i^2(c+dx)}-$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^2,x]
```

```
[Out] -((B*(b*c - a*d)*g)/(d^2*i^2*(c + d*x))) - (b*B*g*Log[a + b*x])/(d^2*i^2) +
 ((b*c - a*d)*g*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^2*i^2*(c + d*x)) +
 (b*B*g*Log[c + d*x])/(d^2*i^2) - (b*B*g*Log[-((d*(a + b*x))/(b*c - a*d))]*
Log[c + d*x])/(d^2*i^2) + (b*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c +
 d*x])/(d^2*i^2) + (b*B*g*Log[c + d*x]^2)/(2*d^2*i^2) - (b*B*g*PolyLog[2, (
b*(c + d*x))/(b*c - a*d)])/(d^2*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(41c+41dx)^2}\,dx = \int \left(\frac{(-bc+ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1681d(c+dx)^2}+\frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1681d(c+dx)}\right)dx$$

$$= \frac{(bg)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}\,dx}{1681d} - \frac{((bc-ad)g)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^2}\,dx}{1681d}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1681d^2(c+dx)} + \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(c+dx)}{1681d^2}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1681d^2(c+dx)} + \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(c+dx)}{1681d^2}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1681d^2(c+dx)} + \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(c+dx)}{1681d^2}$$

$$= -\frac{B(bc-ad)g}{1681d^2(c+dx)} - \frac{bBg\log(a+bx)}{1681d^2} + \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1681d^2(c+dx)}$$

$$= -\frac{B(bc-ad)g}{1681d^2(c+dx)} - \frac{bBg\log(a+bx)}{1681d^2} + \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1681d^2(c+dx)}$$

$$= -\frac{B(bc-ad)g}{1681d^2(c+dx)} - \frac{bBg\log(a+bx)}{1681d^2} + \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1681d^2(c+dx)}$$

$$= -\frac{B(bc-ad)g}{1681d^2(c+dx)} - \frac{bBg\log(a+bx)}{1681d^2} + \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1681d^2(c+dx)}$$

Mathematica [A] time = 0.16, size = 175, normalized size = 1.09

$$\frac{g\left(2b\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+\frac{2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{c+dx}-bB\left(2\text{Li}_2\left(\frac{b(c+dx)}{bc-ad}\right)+\log(c+dx)\left(2\log\left(\frac{d(a+bx)}{ad-bc}\right)\right.\right.\right.}{2d^2i^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x
)^2,x]
```

```
[Out] (g*((2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c + d*x) + 2*b*(A
 + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 2*B*((b*c - a*d)/(c + d*x
) + b*Log[a + b*x] - b*Log[c + d*x]) - b*B*((2*Log[(d*(a + b*x))/(-(b*c) +
a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
])))/(2*d^2*i^2)
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Abgx+Aag+\left(Bbgx+Bag\right)\log\left(\frac{bex+ae}{dx+c}\right)}{d^2i^2x^2+2\,cdi^2x+c^2i^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorit
hm="fricas")
```

```
[Out] integral((A*b*g*x + A*a*g + (B*b*g*x + B*a*g)*log((b*e*x + a*e)/(d*x + c)))
/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 978, normalized size = 6.11

$$-\frac{B\,a^2 g \ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)\,(dx+c)\,i^2}+\frac{2Babcg \ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)\,(dx+c)\,d\,i^2}-\frac{Babg \ln\left(-\frac{-be+\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)d}{be}\right)\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)\,d\,i^2}-\frac{B\,b^2c^2 g \ln\left(\right.}{(ad-bc)\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^2,x)
```

```
[Out] -1/d*g/(a*d-b*c)/i^2*A*b*a+1/d^2*g/(a*d-b*c)/i^2*A*b^2*c-g/(a*d-b*c)/i^2*A/
(d*x+c)*a^2+2/d*g/(a*d-b*c)/i^2*A/(d*x+c)*a*b*c-1/d^2*g/(a*d-b*c)/i^2*A/(d*
x+c)*b^2*c^2-1/d*g/(a*d-b*c)/i^2*A*b*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
d)*a+1/d^2*g/(a*d-b*c)/i^2*A*b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c
-1/d*g/(a*d-b*c)/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a+1/d^2*g/(a*d-b*c
)/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-g/(a*d-b*c)/i^2*B*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+2/d*g/(a*d-b*c)/i^2*B*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)/(d*x+c)*a*b*c-1/d^2*g/(a*d-b*c)/i^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)/(d*x+c)*b^2*c^2+1/d*g/(a*d-b*c)/i^2*B*b*a-1/d^2*g/(a*d-b*c)/i^2*B*b^
2*c+g/(a*d-b*c)/i^2*B/(d*x+c)*a^2-2/d*g/(a*d-b*c)/i^2*B/(d*x+c)*a*b*c+1/d^2
*g/(a*d-b*c)/i^2*B/(d*x+c)*b^2*c^2-1/d*g/(a*d-b*c)/i^2*B*b*dilog(-(-b*e+(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1/d^2*g/(a*d-b*c)/i^2*B*b^2*dilog(-(-b
*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c-1/d*g/(a*d-b*c)/i^2*B*b*ln(b/d*e
+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1
/d^2*g/(a*d-b*c)/i^2*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e
+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,Bbg\left(\frac{(dx+c)\log(dx+c)^2+2\,c\log(dx+c)}{d^3i^2x+cd^2i^2}-2\int\frac{dx\log(bx+a)+dx\log(e)+c}{d^3i^2x^2+2\,cd^2i^2x+c^2di^2}\,dx\right)+Abg\left(\frac{c}{d^3i^2x+cd^2i}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorit
hm="maxima")
```

```
[Out] -1/2*B*b*g*(((d*x + c)*log(d*x + c)^2 + 2*c*log(d*x + c))/(d^3*i^2*x + c*d^
2*i^2) - 2*integrate((d*x*log(b*x + a) + d*x*log(e) + c)/(d^3*i^2*x^2 + 2*c
*d^2*i^2*x + c^2*d*i^2), x)) + A*b*g*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x +
 c)/(d^2*i^2)) - B*a*g*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c
*d*i^2) - 1/(d^2*i^2*x + c*d*i^2) - b*log(b*x + a)/((b*c*d - a*d^2)*i^2) +
b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A*a*g/(d^2*i^2*x + c*d*i^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a\,g+b\,g\,x\right)\,\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}{{\left(c\,i+d\,i\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2,x)
```

```
[Out] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^2, x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.42 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ci+dix)^2}\,dx$

Optimal. Leaf size=98

$$\frac{A(a+bx)}{i^2(c+dx)(bc-ad)}+\frac{B(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{i^2(c+dx)(bc-ad)}-\frac{B(a+bx)}{i^2(c+dx)(bc-ad)}$$

```
[Out] A*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)-B*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)+B*(b*x+a)
*ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)/i^2/(d*x+c)
```

Rubi [A] time = 0.07, antiderivative size = 101, normalized size of antiderivative = 1.03, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2525, 12, 44}

$$-\frac{B\log\left(\frac{e(a+bx)}{c+dx}\right)+A}{di^2(c+dx)}+\frac{bB\log(a+bx)}{di^2(bc-ad)}-\frac{bB\log(c+dx)}{di^2(bc-ad)}+\frac{B}{di^2(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/(c*i + d*i*x)^2,x]
```

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

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(42c+42dx)^2}\,dx = -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{1764d(c+dx)} + \frac{B\int \frac{bc-ad}{42(a+bx)(c+dx)^2}\,dx}{42d}$$

$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{1764d(c+dx)} + \frac{(B(bc-ad))\int \frac{1}{(a+bx)(c+dx)^2}\,dx}{1764d}$$

$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{1764d(c+dx)} + \frac{(B(bc-ad))\int \left(\frac{b^2}{(bc-ad)^2(a+bx)} - \frac{d}{(bc-ad)(c+dx)^2} - \frac{bd}{(bc-ad)^2(c+dx)}\right) dx}{1764d}$$

$$= \frac{B}{1764d(c+dx)} + \frac{bB\log(a+bx)}{1764d(bc-ad)} - \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{1764d(c+dx)} - \frac{bB\log(c+dx)}{1764d(bc-ad)}$$

Mathematica [A] time = 0.05, size = 104, normalized size = 1.06

$$\frac{-aAd+B(bc-ad)\log\left(\frac{e(a+bx)}{c+dx}\right)-bB(c+dx)\log(a+bx)+aBd+Abc+bBc\log(c+dx)+bBdx\log(c+dx)-b}{di^2(c+dx)(ad-bc)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/(c*i + d*i*x)^2,x]
```

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

fricas [A] time = 0.91, size = 88, normalized size = 0.90

$$-\frac{(A-B)bc-(A-B)ad-(Bbdx+Bad)\log\left(\frac{bex+ae}{dx+c}\right)}{\left(bcd^2-ad^3\right)i^2x+\left(bc^2d-acd^2\right)i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="fricas")
```

```
[Out] -((A - B)*b*c - (A - B)*a*d - (B*b*d*x + B*a*d)*log((b*e*x + a*e)/(d*x + c)
))/((b*c*d^2 - a*d^3)*i^2*x + (b*c^2*d - a*c*d^2)*i^2)
```

giac [A] time = 0.74, size = 120, normalized size = 1.22

$$-\left(\frac{(bxe+ae)B\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c}+\frac{(bxe+ae)(A-B)}{dx+c}\right)\left(\frac{bc}{(bce-ade)(bc-ad)}-\frac{ad}{(bce-ade)(bc-ad)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="giac")
```

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

maple [B] time = 0.05, size = 515, normalized size = 5.26

$$-\frac{B\,a^2 d\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2\,(dx+c)\,i^2}+\frac{2Babc\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2\,(dx+c)\,i^2}-\frac{B\,b^2c^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2\,(dx+c)\,d\,i^2}-\frac{A\,a^2 d}{(ad-bc)^2\,(dx+c)\,i^2}+\frac{2Aabc}{(ad-bc)^2\,(dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^2,x)
```

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

maxima [A] time = 1.10, size = 134, normalized size = 1.37

$$-B\left(\frac{\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)}{d^2i^2x+cdi^2}-\frac{1}{d^2i^2x+cdi^2}-\frac{b\log(bx+a)}{\left(bcd-ad^2\right)i^2}+\frac{b\log(dx+c)}{\left(bcd-ad^2\right)i^2}\right)-\frac{A}{d^2i^2x+cdi^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^2,x, algorithm="maxima")
```

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

mupad [B] time = 4.89, size = 106, normalized size = 1.08

$$-\frac{A-B}{x\,d^2\,i^2+c\,d\,i^2}-\frac{B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)}{d^2\,i^2\,\left(x+\frac{c}{d}\right)}+\frac{B\,b\,\mathrm{atan}\left(\frac{b\,c\,2\mathrm{i}+b\,d\,x\,2\mathrm{i}}{a\,d-b\,c}+1\mathrm{i}\right)\,2\mathrm{i}}{d\,i^2\,\left(a\,d-b\,c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/(c*i + d*i*x)^2,x)
```

```
[Out] (B*b*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*2i)/(d*i^2*(a*d - b*c)) - (
B*log((e*(a + b*x))/(c + d*x)))/(d^2*i^2*(x + c/d)) - (A - B)/(d^2*i^2*x +
c*d*i^2)
```

sympy [B] time = 1.52, size = 231, normalized size = 2.36

$$\frac{Bb\log\left(x+\frac{-\frac{Ba^2bd^2}{ad-bc}+\frac{2Bab^2cd}{ad-bc}+Babd-\frac{Bb^3c^2}{ad-bc}+Bb^2c}{2Bb^2d}\right)}{di^2\left(ad-bc\right)}-\frac{Bb\log\left(x+\frac{\frac{Ba^2bd^2}{ad-bc}-\frac{2Bab^2cd}{ad-bc}+Babd+\frac{Bb^3c^2}{ad-bc}+Bb^2c}{2Bb^2d}\right)}{di^2\left(ad-bc\right)}-\frac{B\log\left(\frac{e(a+bx)}{c+dx}\right)}{cdi^2+d^2i^2x}+\frac{-A}{cdi^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**2,x)
```

```
[Out] B*b*log(x + (-B*a**2*b*d**2/(a*d - b*c) + 2*B*a*b**2*c*d/(a*d - b*c) + B*a*
b*d - B*b**3*c**2/(a*d - b*c) + B*b**2*c)/(2*B*b**2*d))/(d*i**2*(a*d - b*c)
) - B*b*log(x + (B*a**2*b*d**2/(a*d - b*c) - 2*B*a*b**2*c*d/(a*d - b*c) + B
*a*b*d + B*b**3*c**2/(a*d - b*c) + B*b**2*c)/(2*B*b**2*d))/(d*i**2*(a*d - b
*c)) - B*log(e*(a + b*x)/(c + d*x))/(c*d*i**2 + d**2*i**2*x) + (-A + B)/(c*
d*i**2 + d**2*i**2*x)
```

3.43 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)(ci+dix)^2}\,dx$

Optimal. Leaf size=156

$$\frac{b\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2Bgi^2(bc-ad)^2}-\frac{Ad(a+bx)}{gi^2(c+dx)(bc-ad)^2}-\frac{Bd(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{gi^2(c+dx)(bc-ad)^2}+\frac{Bd(a+bx)}{gi^2(c+dx)(bc-ad)^2}$$

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

Rubi [C] time = 0.71, antiderivative size = 432, normalized size of antiderivative = 2.77, number of steps used = 24, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44}

$$\frac{bB\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{gi^2(bc-ad)^2}+\frac{bB\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{gi^2(bc-ad)^2}+\frac{b\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{gi^2(bc-ad)^2}+\frac{B\log\left(\frac{e(a+bx)}{c+dx}\right)+A}{gi^2(c+dx)(bc-ad)}-\frac{b\,l}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)*(c*i + d*i*x)^2),x]
```

```
[Out] -(B/((b*c - a*d)*g*i^2*(c + d*x))) - (b*B*Log[a + b*x])/((b*c - a*d)^2*g*i^
2) - (b*B*Log[a + b*x]^2)/(2*(b*c - a*d)^2*g*i^2) + (A + B*Log[(e*(a + b*x)
)/(c + d*x)])/((b*c - a*d)*g*i^2*(c + d*x)) + (b*Log[a + b*x]*(A + B*Log[(e
*(a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g*i^2) + (b*B*Log[c + d*x])/((b*c -
 a*d)^2*g*i^2) + (b*B*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c
 - a*d)^2*g*i^2) - (b*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((
b*c - a*d)^2*g*i^2) - (b*B*Log[c + d*x]^2)/(2*(b*c - a*d)^2*g*i^2) + (b*B*L
og[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2) + (b*B*Po
lyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g*i^2) + (b*B*PolyLo
g[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(43c+43dx)^2(ag+bgx)}dx = \int \left(\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1849(bc-ad)^2g(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1849(bc-ad)g(c+dx)^2} - \frac{bd\left(A+B\log\left(\frac{e(a+bx}{c+dx}\right.\right.}{1849(bc-ad)^2g(c+}\right.$$

$$= \frac{b^2\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}dx}{1849(bc-ad)^2g} - \frac{(bd)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}dx}{1849(bc-ad)^2g} - \frac{d\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^2}dx}{1849(bc-ad)g}$$

$$= \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1849(bc-ad)^2g} - \frac{b\left(A+B\log\left(\right.\right.}{1849(}$$

$$= \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1849(bc-ad)^2g} - \frac{b\left(A+B\log\left(\right.\right.}{1849(}$$

$$= \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1849(bc-ad)^2g} - \frac{b\left(A+B\log\left(\right.\right.}{1849(}$$

$$= -\frac{B}{1849(bc-ad)g(c+dx)} - \frac{bB\log(a+bx)}{1849(bc-ad)^2g} + \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc-ad)g(c+dx)} + \frac{b\log(}{}$$

$$= -\frac{B}{1849(bc-ad)g(c+dx)} - \frac{bB\log(a+bx)}{1849(bc-ad)^2g} + \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{1849(bc-ad)g(c+dx)} + \frac{b\log(}{}$$

$$= -\frac{B}{1849(bc-ad)g(c+dx)} - \frac{bB\log(a+bx)}{1849(bc-ad)^2g} - \frac{bB\log^2(a+bx)}{3698(bc-ad)^2g} + \frac{A+B\log}{1849(bc-ad}$$

$$= -\frac{B}{1849(bc-ad)g(c+dx)} - \frac{bB\log(a+bx)}{1849(bc-ad)^2g} - \frac{bB\log^2(a+bx)}{3698(bc-ad)^2g} + \frac{A+B\log}{1849(bc-ad}$$

Mathematica [C] time = 0.28, size = 292, normalized size = 1.87

$$\frac{2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2b(c+dx)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-2b(c+dx)\log(c+dx)\left(B\log\left(\frac{e(}{}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)*(c*i + d*i*x)
^2),x]
```

```
[Out] (2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*b*(c + d*x)*Log[a +
 b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2*b*(c + d*x)*(A + B*Log[(e*(a
 + b*x))/(c + d*x)])*Log[c + d*x] - 2*B*(b*c - a*d + b*(c + d*x)*Log[a + b*
x] - b*(c + d*x)*Log[c + d*x]) - b*B*(c + d*x)*(Log[a + b*x]*(Log[a + b*x]
- 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) +
a*d)]) + b*B*(c + d*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x]
)*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(2*(b*c - a*d)^2
*g*i^2*(c + d*x))
```

fricas [A] time = 0.89, size = 151, normalized size = 0.97

$$\frac{2\,(A-B)bc - 2\,(A-B)ad + (Bbdx+Bbc)\log\left(\frac{bex+ae}{dx+c}\right)^2 + 2\,((A-B)bdx + Abc - Bad)\log\left(\frac{bex+ae}{dx+c}\right)}{2\left(\left(b^2c^2d - 2\,abcd^2 + a^2d^3\right)gi^2x + \left(b^2c^3 - 2\,abc^2d + a^2cd^2\right)gi^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorit
hm="fricas")
```

```
[Out] 1/2*(2*(A - B)*b*c - 2*(A - B)*a*d + (B*b*d*x + B*b*c)*log((b*e*x + a*e)/(d
*x + c))^2 + 2*((A - B)*b*d*x + A*b*c - B*a*d)*log((b*e*x + a*e)/(d*x + c))
)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*g*i^2*x + (b^2*c^3 - 2*a*b*c^2*d + a
^2*c*d^2)*g*i^2)
```

giac [A] time = 1.00, size = 204, normalized size = 1.31

$$-\frac{\left(Bbe\log\left(\frac{bxe+ae}{dx+c}\right)^2+2\,Abe\log\left(\frac{bxe+ae}{dx+c}\right)-\frac{2\,(bxe+ae)Bd\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c}-\frac{2\,(bxe+ae)Ad}{dx+c}+\frac{2\,(bxe+ae)Bd}{dx+c}\right)\left(\frac{bc}{(bce-ade)(bc-ad)}-\frac{}{(bce\cdots}\right.}{2\left(bcg-adg\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorit
hm="giac")
```

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

maple [B] time = 0.05, size = 759, normalized size = 4.87

$$-\frac{B\,a^2d^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^3\,(dx+c)\,g\,i^2}+\frac{2Babcd\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^3\,(dx+c)\,g\,i^2}+\frac{Babd\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{2\,(ad-bc)^3\,g\,i^2}-\frac{B\,b^2c^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^3\,(dx+c)\,g\,i^2}-\frac{B\,b^2c\,\mathrm{l}\cdots}{2\,(\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)/(d*i*x+c*i)^2,x)
```

```
[Out] -d/i^2/(a*d-b*c)^3/g*A*b*a+1/i^2/(a*d-b*c)^3/g*A*b^2*c-d^2/i^2/(a*d-b*c)^3/
g*A/(d*x+c)*a^2+2*d/i^2/(a*d-b*c)^3/g*A/(d*x+c)*a*b*c-1/i^2/(a*d-b*c)^3/g*A
/(d*x+c)*b^2*c^2+d/i^2/(a*d-b*c)^3/g*A*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-
1/i^2/(a*d-b*c)^3/g*A*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d/i^2/(a*d-b*c)
^3/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a+1/i^2/(a*d-b*c)^3/g*B*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)*b^2*c-d^2/i^2/(a*d-b*c)^3/g*B*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)/(d*x+c)*a^2+2*d/i^2/(a*d-b*c)^3/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)/(d*x+c)*a*b*c-1/i^2/(a*d-b*c)^3/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+
c)*b^2*c^2+d^2/i^2/(a*d-b*c)^3/g*B/(d*x+c)*a^2-2*d/i^2/(a*d-b*c)^3/g*B/(d*x
+c)*a*b*c+1/i^2/(a*d-b*c)^3/g*B/(d*x+c)*b^2*c^2+d/i^2/(a*d-b*c)^3/g*B*b*a-1
/i^2/(a*d-b*c)^3/g*B*b^2*c+1/2*d/i^2/(a*d-b*c)^3/g*B*b*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)^2*a-1/2/i^2/(a*d-b*c)^3/g*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
^2*c
```

maxima [B] time = 1.32, size = 421, normalized size = 2.70

$$B\left(\frac{1}{\left(bcd-ad^2\right)gi^2x+\left(bc^2-acd\right)gi^2}+\frac{b\log\left(bx+a\right)}{\left(b^2c^2-2\,abcd+a^2d^2\right)gi^2}-\frac{b\log\left(dx+c\right)}{\left(b^2c^2-2\,abcd+a^2d^2\right)gi^2}\right)\log\left(\frac{bex}{dx+c}+\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algorit
hm="maxima")
```

```
[Out] B*(1/((b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b
^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d
 + a^2*d^2)*g*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + A*(1/((b*c*d - a
*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b^2*c^2 - 2*a*b*c
*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^
2)) - 1/2*((b*d*x + b*c)*log(b*x + a)^2 + (b*d*x + b*c)*log(d*x + c)^2 + 2*
b*c - 2*a*d + 2*(b*d*x + b*c)*log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)
*log(b*x + a))*log(d*x + c))*B/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d
^2*g*i^2 + (b^2*c^2*d*g*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2)*x)
```

mupad [B] time = 5.81, size = 247, normalized size = 1.58

$$\frac{B\,b\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2}{2\,g\,i^2\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}-\frac{A-B}{(a\,d-b\,c)\,\left(c\,g\,i^2+d\,g\,i^2\,x\right)}-\frac{B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\,(a\,d-b\,c)}{b\,d\,g\,i^2\,\left(\frac{x}{b}+\frac{c}{b\,d}\right)\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}-\frac{b\,\mathrm{atan}\Bigg(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)*(c*i + d*i*x)^2),x)
```

```
[Out] (B*b*log((e*(a + b*x))/(c + d*x))^2)/(2*g*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*
d)) - (b*atan(((2*b*d*x + (a^2*d^2*g*i^2 - b^2*c^2*g*i^2)/(g*i^2*(a*d - b*c
)))*1i)/(a*d - b*c))*(A - B)*2i)/(g*i^2*(a*d - b*c)^2) - (A - B)/((a*d - b*
c)*(c*g*i^2 + d*g*i^2*x)) - (B*log((e*(a + b*x))/(c + d*x))*(a*d - b*c))/(b
*d*g*i^2*(x/b + c/(b*d))*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))
```

sympy [B] time = 2.50, size = 386, normalized size = 2.47

$$\frac{Bb\log\left(\frac{e(a+bx)}{c+dx}\right)^2}{2a^2d^2gi^2-4abcdgi^2+2b^2c^2gi^2}-\frac{B\log\left(\frac{e(a+bx)}{c+dx}\right)}{acdgi^2+ad^2gi^2x-bc^2gi^2-bcdgi^2x}+(A-B)\left(-\frac{b\log\left(x+\frac{-\frac{a^3bd^3}{(ad-bc)^2}+\frac{3a^2b^2cd^2}{(ad-bc)^2}-\frac{3ab^3c}{(ad-b}}{2b^2d}\right.}{gi^2\,(ad-bc)^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)**2,x)
```

```
[Out] B*b*log(e*(a + b*x)/(c + d*x))**2/(2*a**2*d**2*g*i**2 - 4*a*b*c*d*g*i**2 +
2*b**2*c**2*g*i**2) - B*log(e*(a + b*x)/(c + d*x))/(a*c*d*g*i**2 + a*d**2*g
*i**2*x - b*c**2*g*i**2 - b*c*d*g*i**2*x) + (A - B)*(-b*log(x + (-a**3*b*d*
*3/(a*d - b*c)**2 + 3*a**2*b**2*c*d**2/(a*d - b*c)**2 - 3*a*b**3*c**2*d/(a*
d - b*c)**2 + a*b*d + b**4*c**3/(a*d - b*c)**2 + b**2*c)/(2*b**2*d))/(g*i**
2*(a*d - b*c)**2) + b*log(x + (a**3*b*d**3/(a*d - b*c)**2 - 3*a**2*b**2*c*d
**2/(a*d - b*c)**2 + 3*a*b**3*c**2*d/(a*d - b*c)**2 + a*b*d - b**4*c**3/(a*
d - b*c)**2 + b**2*c)/(2*b**2*d))/(g*i**2*(a*d - b*c)**2) - 1/(a*c*d*g*i**2
 - b*c**2*g*i**2 + x*(a*d**2*g*i**2 - b*c*d*g*i**2)))
```

3.44 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^2(ci+dix)^2}\,dx$

Optimal. Leaf size=261

$$-\frac{b^2(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^2(a+bx)(bc-ad)^3}+\frac{d^2(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^2(c+dx)(bc-ad)^3}-\frac{2bd\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^2(bc-ad)^3}-\frac{g^2i}{}$$

```
[Out] -B*d^2*(b*x+a)/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-b^2*B*(d*x+c)/(-a*d+b*c)^3/g^2/
i^2/(b*x+a)+b*B*d*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g^2/i^2+d^2*(b*x+a)*(A
+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-b^2*(d*x+c)*(A+B*ln(
e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^2/i^2/(b*x+a)-2*b*d*ln((b*x+a)/(d*x+c))*
(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^2/i^2
```

Rubi [C] time = 0.87, antiderivative size = 462, normalized size of antiderivative = 1.77, number of steps used = 28, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{2bBd\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^2i^2(bc-ad)^3}-\frac{2bBd\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^2i^2(bc-ad)^3}-\frac{2bd\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^2(bc-ad)^3}-\frac{b\left(B\log\left(\frac{e(a+}{c+}\right.\right.}{g^2i^2(a+bx)(}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^2*(c*i + d*i*x)^2),
x]
```

```
[Out] -((b*B)/((b*c - a*d)^2*g^2*i^2*(a + b*x))) + (B*d)/((b*c - a*d)^2*g^2*i^2*(
c + d*x)) + (b*B*d*Log[a + b*x]^2)/((b*c - a*d)^3*g^2*i^2) - (b*(A + B*Log[
(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g^2*i^2*(a + b*x)) - (d*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g^2*i^2*(c + d*x)) - (2*b*d*Log
[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^3*g^2*i^2) - (
2*b*B*d*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^3*g^2*
i^2) + (2*b*d*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*
d)^3*g^2*i^2) + (b*B*d*Log[c + d*x]^2)/((b*c - a*d)^3*g^2*i^2) - (2*b*B*d*L
og[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) - (2*b*
B*d*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^2*i^2) - (2*
b*B*d*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(44c+44dx)^2(ag+bgx)^2}\,dx = \int \left(\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1936(bc-ad)^2g^2(a+bx)^2} - \frac{b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{968(bc-ad)^3g^2(a+bx)} + \frac{d^2\left(A+B\log\right.}{1936(bc-ad)\cdots} \right.$$

$$= -\frac{\left(b^2d\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}dx}{968(bc-ad)^3g^2} + \frac{\left(bd^2\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}dx}{968(bc-ad)^3g^2} + \frac{b^2\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)^2}}{1936(bc-ad)^2\cdots}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1936(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1936(bc-ad)^2g^2(c+dx)} - \frac{bd\log(a+bx)\left(A\cdots\right.}{968(bc\cdots}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1936(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1936(bc-ad)^2g^2(c+dx)} - \frac{bd\log(a+bx)\left(A\cdots\right.}{968(bc\cdots}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1936(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1936(bc-ad)^2g^2(c+dx)} - \frac{bd\log(a+bx)\left(A\cdots\right.}{968(bc\cdots}$$

$$= -\frac{bB}{1936(bc-ad)^2g^2(a+bx)} + \frac{Bd}{1936(bc-ad)^2g^2(c+dx)} - \frac{b\left(A+B\log\left(\frac{e(\cdots}{\cdots}\right.\right.}{1936(bc-ad)^2g^2\cdots}$$

$$= -\frac{bB}{1936(bc-ad)^2g^2(a+bx)} + \frac{Bd}{1936(bc-ad)^2g^2(c+dx)} - \frac{b\left(A+B\log\left(\frac{e(\cdots}{\cdots}\right.\right.}{1936(bc-ad)^2g^2\cdots}$$

$$= -\frac{bB}{1936(bc-ad)^2g^2(a+bx)} + \frac{Bd}{1936(bc-ad)^2g^2(c+dx)} + \frac{bBd\log^2(a+bx)}{1936(bc-ad)^3g^2\cdots}$$

$$= -\frac{bB}{1936(bc-ad)^2g^2(a+bx)} + \frac{Bd}{1936(bc-ad)^2g^2(c+dx)} + \frac{bBd\log^2(a+bx)}{1936(bc-ad)^3g^2\cdots}$$

Mathematica [C] time = 0.43, size = 324, normalized size = 1.24

$$\frac{-2bd\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) - \frac{b(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{a+bx} + 2bd\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) + \frac{d(ad\cdots}{\cdots}}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^2*(c*i + d*i*
x)^2),x]
```

```
[Out] (-((b^2*B*c)/(a + b*x)) + (a*b*B*d)/(a + b*x) + (b*B*c*d)/(c + d*x) - (a*B*
d^2)/(c + d*x) - (b*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(a +
b*x) + (d*(-(b*c) + a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c + d*x) -
2*b*d*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*b*d*(A + B*Log[
(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + b*B*d*(Log[a + b*x]*(Log[a + b*x]
- 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) +
a*d)]) - b*B*d*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c
+ d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^3*g^2*i^2)
```

fricas [A] time = 0.91, size = 334, normalized size = 1.28

$$-\frac{(A+B)b^2c^2 - 2\,Babcd - (A-B)a^2d^2 + \left(Bb^2d^2x^2 + Babcd + \left(Bb^2cd + Babd^2\right)x\right)\log\left(\frac{bex+ae}{dx+c}\right)^2 + 2\left(Ab^2cd - \cdots\right.}{\left(b^4c^3d - 3\,ab^3c^2d^2 + 3\,a^2b^2cd^3 - a^3bd^4\right)g^2i^2x^2 + \left(b^4c^4 - 2\,ab^3c^3d + 2\,a^3b\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algor
ithm="fricas")
```

```
[Out] -((A + B)*b^2*c^2 - 2*B*a*b*c*d - (A - B)*a^2*d^2 + (B*b^2*d^2*x^2 + B*a*b*
c*d + (B*b^2*c*d + B*a*b*d^2)*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*b^2*
c*d - A*a*b*d^2)*x + (2*A*b^2*d^2*x^2 + B*b^2*c^2 + 2*A*a*b*c*d - B*a^2*d^2
 + 2*((A + B)*b^2*c*d + (A - B)*a*b*d^2)*x)*log((b*e*x + a*e)/(d*x + c)))/(
(b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*g^2*i^2*x^2 + (
b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*g^2*i^2*x + (a*b^3*c^4 -
 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*g^2*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.05, size = 1187, normalized size = 4.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)
```

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

maxima [B] time = 1.41, size = 859, normalized size = 3.29

$$-B\left(\frac{2\,bdx + bc + ad}{\left(b^3c^2d - 2\,ab^2cd^2 + a^2bd^3\right)g^2i^2x^2 + \left(b^3c^3 - ab^2c^2d - a^2bcd^2 + a^3d^3\right)g^2i^2x + \left(ab^2c^3 - 2\,a^2bc^2d + a^3cd^2\right)g^2i^2} + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, algor
ithm="maxima")
```

```
[Out] -B*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*g^2*i^2*
x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x + (a*b^2*c^
3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*log(b*x + a)/((b^3*c^3 - 3*
a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*d*log(d*x + c)/((b^3*
c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2))*log(b*e*x/(d*x + c
) + a*e/(d*x + c)) - A*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2 +
 a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g
^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*log(b*x
 + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*d
*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2)
) - (b^2*c^2 - 2*a*b*c*d + a^2*d^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*
b*d^2)*x)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x
)*log(b*x + a)*log(d*x + c) - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*
x)*log(d*x + c)^2)*B/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^2*i^2 + 3*a^3*b
*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - 3*a*b^3*c^2*d^2
*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 + (b^4*c^4*g^2*
i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^4*g^2*i^2)*x)
```

mupad [B] time = 6.18, size = 415, normalized size = 1.59

$$\frac{B\,b\,d\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2}{g^2\,i^2\,(a\,d-b\,c)^3}-\frac{A\,a\,d}{g^2\,i^2\,(a\,d-b\,c)^2\,(a+b\,x)\,(c+d\,x)}-\frac{A\,b\,c}{g^2\,i^2\,(a\,d-b\,c)^2\,(a+b\,x)\,(c+d\,x)}+\frac{B\,a}{g^2\,i^2\,(a\,d-b\,c)^2\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^2*(c*i + d*i*x)^2),
x)
```

```
[Out] (B*b*d*log((e*(a + b*x))/(c + d*x))^2)/(g^2*i^2*(a*d - b*c)^3) - (A*b*d*ata
n((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*4i)/(g^2*i^2*(a*d - b*c)^3) - (
A*a*d)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (A*b*c)/(g^2*i^2*(a*d
- b*c)^2*(a + b*x)*(c + d*x)) + (B*a*d)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c
 + d*x)) - (B*b*c)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (2*A*b*d*x
)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (B*a*d*log((e*(a + b*x))/(c
 + d*x)))/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (B*b*c*log((e*(a +
b*x))/(c + d*x)))/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (2*B*b*d*x*
log((e*(a + b*x))/(c + d*x)))/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x))
```

sympy [B] time = 5.84, size = 828, normalized size = 3.17

$$-\frac{2Abd\log\left(x+\frac{-\frac{2Aa^4bd^5}{(ad-bc)^3}+\frac{8Aa^3b^2cd^4}{(ad-bc)^3}-\frac{12Aa^2b^3c^2d^3}{(ad-bc)^3}+\frac{8Aab^4c^3d^2}{(ad-bc)^3}+2Aabd^2-\frac{2Ab^5c^4d}{(ad-bc)^3}+2Ab^2cd}{4Ab^2d^2}\right)}{g^2i^2\,(ad-bc)^3}+\frac{2Abd\log\left(x+\frac{\frac{2Aa^4bd^5}{(ad-bc)^3}-\frac{8Aa^3b^2cd^4}{(ad-bc)^3}+\frac{12A}{(}}{}\right)}{g^2i^2\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**2/(d*i*x+c*i)**2,x)
```

```
[Out] -2*A*b*d*log(x + (-2*A*a**4*b*d**5/(a*d - b*c)**3 + 8*A*a**3*b**2*c*d**4/(a
*d - b*c)**3 - 12*A*a**2*b**3*c**2*d**3/(a*d - b*c)**3 + 8*A*a*b**4*c**3*d*
*2/(a*d - b*c)**3 + 2*A*a*b*d**2 - 2*A*b**5*c**4*d/(a*d - b*c)**3 + 2*A*b**
2*c*d)/(4*A*b**2*d**2))/(g**2*i**2*(a*d - b*c)**3) + 2*A*b*d*log(x + (2*A*a
**4*b*d**5/(a*d - b*c)**3 - 8*A*a**3*b**2*c*d**4/(a*d - b*c)**3 + 12*A*a**2
*b**3*c**2*d**3/(a*d - b*c)**3 - 8*A*a*b**4*c**3*d**2/(a*d - b*c)**3 + 2*A*
a*b*d**2 + 2*A*b**5*c**4*d/(a*d - b*c)**3 + 2*A*b**2*c*d)/(4*A*b**2*d**2))/
(g**2*i**2*(a*d - b*c)**3) + B*b*d*log(e*(a + b*x)/(c + d*x))**2/(a**3*d**3
*g**2*i**2 - 3*a**2*b*c*d**2*g**2*i**2 + 3*a*b**2*c**2*d*g**2*i**2 - b**3*c
**3*g**2*i**2) + (-B*a*d - B*b*c - 2*B*b*d*x)*log(e*(a + b*x)/(c + d*x))/(a
```

```
**3*c*d**2*g**2*i**2 + a**3*d**3*g**2*i**2*x - 2*a**2*b*c**2*d*g**2*i**2 -
a**2*b*c*d**2*g**2*i**2*x + a**2*b*d**3*g**2*i**2*x**2 + a*b**2*c**3*g**2*i
**2 - a*b**2*c**2*d*g**2*i**2*x - 2*a*b**2*c*d**2*g**2*i**2*x**2 + b**3*c**
3*g**2*i**2*x + b**3*c**2*d*g**2*i**2*x**2) - (A*a*d + A*b*c + 2*A*b*d*x -
B*a*d + B*b*c)/(a**3*c*d**2*g**2*i**2 - 2*a**2*b*c**2*d*g**2*i**2 + a*b**2*
c**3*g**2*i**2 + x**2*(a**2*b*d**3*g**2*i**2 - 2*a*b**2*c*d**2*g**2*i**2 +
b**3*c**2*d*g**2*i**2) + x*(a**3*d**3*g**2*i**2 - a**2*b*c*d**2*g**2*i**2 -
 a*b**2*c**2*d*g**2*i**2 + b**3*c**3*g**2*i**2))
```

3.45 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^3(ci+dix)^2}\,dx$

Optimal. Leaf size=364

$$-\frac{b^3(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^3i^2(a+bx)^2(bc-ad)^4}+\frac{3b^2d(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^3i^2(a+bx)(bc-ad)^4}-\frac{d^3(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^3i^2(c+dx)(bc-ad)^4}+\frac{3bd}{}$$

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

Rubi [C] time = 1.12, antiderivative size = 630, normalized size of antiderivative = 1.73, number of steps used = 32, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3bBd^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^3i^2(bc-ad)^4}+\frac{3bBd^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^3i^2(bc-ad)^4}+\frac{3bd^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^3i^2(bc-ad)^4}+\frac{d^2\left(B\log\left(\right.\right.}{g^3i^2(c+d}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^3*(c*i + d*i*x)^2),
x]
```

```
[Out] -(b*B)/(4*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (5*b*B*d)/(2*(b*c - a*d)^3*g
^3*i^2*(a + b*x)) - (B*d^2)/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (3*b*B*d^2*
Log[a + b*x])/(2*(b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*Log[a + b*x]^2)/(2*(b*
c - a*d)^4*g^3*i^2) - (b*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*(b*c - a*
d)^2*g^3*i^2*(a + b*x)^2) + (2*b*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((
b*c - a*d)^3*g^3*i^2*(a + b*x)) + (d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])
)/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (3*b*d^2*Log[a + b*x]*(A + B*Log[(e*(
a + b*x))/(c + d*x)]))/((b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*Log[c + d*x])/(
2*(b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log
[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*b*d^2*(A + B*Log[(e*(a + b*x))/(c +
 d*x)])*Log[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*Log[c + d*x]^2)/
(2*(b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c
- a*d)])/((b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*PolyLog[2, -((d*(a + b*x))/(b
*c - a*d))])/((b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*PolyLog[2, (b*(c + d*x))/
(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(45c+45dx)^2(ag+bgx)^3}\,dx = \int \left(\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2025(bc-ad)^2g^3(a+bx)^3} - \frac{2b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2025(bc-ad)^3g^3(a+bx)^2} + \frac{b^2d^2\left(A+B\ldots\right.}{675(bc-a\ldots}\right.$$

$$= \frac{\left(b^2d^2\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}\,dx}{675(bc-ad)^4g^3} - \frac{\left(bd^3\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}\,dx}{675(bc-ad)^4g^3} - \frac{\left(2b^2d\right)\int \frac{A+B\log\left(\frac{e\ldots}{\ldots}\right.}{(a+bx)\ldots}}{2025(bc-ad)\ldots}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4050(bc-ad)^2g^3(a+bx)^2} + \frac{2bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2025(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+B\log\ldots\right.}{2025(bc-ad)^3\ldots}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4050(bc-ad)^2g^3(a+bx)^2} + \frac{2bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2025(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+B\log\ldots\right.}{2025(bc-ad)^3\ldots}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4050(bc-ad)^2g^3(a+bx)^2} + \frac{2bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2025(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+B\log\ldots\right.}{2025(bc-ad)^3\ldots}$$

$$= -\frac{bB}{8100(bc-ad)^2g^3(a+bx)^2} + \frac{bBd}{810(bc-ad)^3g^3(a+bx)} - \frac{Bd^2}{2025(bc-ad)^3g^3\ldots}$$

$$= -\frac{bB}{8100(bc-ad)^2g^3(a+bx)^2} + \frac{bBd}{810(bc-ad)^3g^3(a+bx)} - \frac{Bd^2}{2025(bc-ad)^3g^3\ldots}$$

$$= -\frac{bB}{8100(bc-ad)^2g^3(a+bx)^2} + \frac{bBd}{810(bc-ad)^3g^3(a+bx)} - \frac{Bd^2}{2025(bc-ad)^3g^3\ldots}$$

$$= -\frac{bB}{8100(bc-ad)^2g^3(a+bx)^2} + \frac{bBd}{810(bc-ad)^3g^3(a+bx)} - \frac{Bd^2}{2025(bc-ad)^3g^3\ldots}$$

Mathematica [C] time = 0.73, size = 453, normalized size = 1.24

$$\frac{12bd^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) + \frac{4d^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{c+dx} - 12bd^2\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) + \ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^3*(c*i + d*i*
x)^2),x]
```

```
[Out] (-((b*B*(b*c - a*d)^2)/(a + b*x)^2) + (8*b^2*B*c*d)/(a + b*x) - (8*a*b*B*d^
2)/(a + b*x) + (2*b*B*d*(b*c - a*d))/(a + b*x) - (4*b*B*c*d^2)/(c + d*x) +
(4*a*B*d^3)/(c + d*x) + 6*b*B*d^2*Log[a + b*x] - (2*b*(b*c - a*d)^2*(A + B*
Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x)^2 + (8*b*d*(b*c - a*d)*(A + B*Log[
(e*(a + b*x))/(c + d*x)]))/(a + b*x) + (4*d^2*(b*c - a*d)*(A + B*Log[(e*(a
+ b*x))/(c + d*x)]))/(c + d*x) + 12*b*d^2*Log[a + b*x]*(A + B*Log[(e*(a + b
*x))/(c + d*x)]) - 6*b*B*d^2*Log[c + d*x] - 12*b*d^2*(A + B*Log[(e*(a + b*x
))/(c + d*x)])*Log[c + d*x] - 6*b*B*d^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log
[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])
+ 6*b*B*d^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d
*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(4*(b*c - a*d)^4*g^3*i^2)
```

fricas [A] time = 0.88, size = 664, normalized size = 1.82

$$-\frac{(2A+B)b^3c^3 - 12(A+B)ab^2c^2d + 3(2A+5B)a^2bcd^2 + 4(A-B)a^3d^3 - 6\left((2A+B)b^3cd^2 - (2A+B)ab^2d^3\right)}{4\left(\left(b^6c^4d - 4ab^5c^3d^2 + 6a^2b^4\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, algor
ithm="fricas")
```

```
[Out] -1/4*((2*A + B)*b^3*c^3 - 12*(A + B)*a*b^2*c^2*d + 3*(2*A + 5*B)*a^2*b*c*d^
2 + 4*(A - B)*a^3*d^3 - 6*((2*A + B)*b^3*c*d^2 - (2*A + B)*a*b^2*d^3)*x^2 -
 6*(B*b^3*d^3*x^3 + B*a^2*b*c*d^2 + (B*b^3*c*d^2 + 2*B*a*b^2*d^3)*x^2 + (2*
B*a*b^2*c*d^2 + B*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 3*((2*A +
3*B)*b^3*c^2*d + 2*(2*A - B)*a*b^2*c*d^2 - (6*A + B)*a^2*b*d^3)*x - 2*(3*(2
*A + B)*b^3*d^3*x^3 - B*b^3*c^3 + 6*B*a*b^2*c^2*d + 6*A*a^2*b*c*d^2 - 2*B*a
^3*d^3 + 3*((2*A + 3*B)*b^3*c*d^2 + 4*A*a*b^2*d^3)*x^2 + 3*(B*b^3*c^2*d + 4
*(A + B)*a*b^2*c*d^2 + 2*(A - B)*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c))
)/((b^6*c^4*d - 4*a*b^5*c^3*d^2 + 6*a^2*b^4*c^2*d^3 - 4*a^3*b^3*c*d^4 + a^4
*b^2*d^5)*g^3*i^2*x^3 + (b^6*c^5 - 2*a*b^5*c^4*d - 2*a^2*b^4*c^3*d^2 + 8*a^
3*b^3*c^2*d^3 - 7*a^4*b^2*c*d^4 + 2*a^5*b*d^5)*g^3*i^2*x^2 + (2*a*b^5*c^5 -
 7*a^2*b^4*c^4*d + 8*a^3*b^3*c^3*d^2 - 2*a^4*b^2*c^2*d^3 - 2*a^5*b*c*d^4 +
a^6*d^5)*g^3*i^2*x + (a^2*b^4*c^5 - 4*a^3*b^3*c^4*d + 6*a^4*b^2*c^3*d^2 - 4
*a^5*b*c^2*d^3 + a^6*c*d^4)*g^3*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.05, size = 1635, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)
```

```
[Out] 3*d^3/i^2/(a*d-b*c)^5/g^3*A*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-3*d^2/i^2/(
a*d-b*c)^5/g^3*A*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^3/i^2/(a*d-b*c)^5/
g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a+d^2/i^2/(a*d-b*c)^5/g^3*B*ln(b/d*
e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-d^4/i^2/(a*d-b*c)^5/g^3*B*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)/(d*x+c)*a^2+3/2*d^3/i^2/(a*d-b*c)^5/g^3*B*b*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)^2*a-3/2*d^2/i^2/(a*d-b*c)^5/g^3*B*b^2*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)^2*c-1/4*d*e^2/i^2/(a*d-b*c)^5/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*
b*c/d*e+b/d*e)^2*a+d^3/i^2/(a*d-b*c)^5/g^3*B*b*a-d^2/i^2/(a*d-b*c)^5/g^3*B*
b^2*c-d^3/i^2/(a*d-b*c)^5/g^3*A*b*a+d^2/i^2/(a*d-b*c)^5/g^3*A*b^2*c-d^2/i^2
/(a*d-b*c)^5/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2-d^4/i^2/
(a*d-b*c)^5/g^3*A/(d*x+c)*a^2+d^4/i^2/(a*d-b*c)^5/g^3*B/(d*x+c)*a^2+2*d^3/i
^2/(a*d-b*c)^5/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*b*c-3*d*e/i^
2/(a*d-b*c)^5/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)*c-1/2*d*e^2/i^2/(a*d-b*c)^5/g^3*B*b^3/(1/(d*x+c)*a*e-1
/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+3*d^2*e/i^2/(a*
d-b*c)^5/g^3*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*
```

```
c)/(d*x+c)/d*e)*a-d^2/i^2/(a*d-b*c)^5/g^3*A/(d*x+c)*b^2*c^2+1/2*e^2/i^2/(a*
d-b*c)^5/g^3*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+d^2/i^2/(a*d
-b*c)^5/g^3*B/(d*x+c)*b^2*c^2+1/4*e^2/i^2/(a*d-b*c)^5/g^3*B*b^4/(1/(d*x+c)*
a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-3*d*e/i^2/(a*d-b*c)^5/g^3*B*b^3/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-1/2*d*e^2/i^2/(a*d-b*c)^5/g^3*A*b^3/(1/(d*x
+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-3*d*e/i^2/(a*d-b*c)^5/g^3*A*b^3/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+3*d^2*e/i^2/(a*d-b*c)^5/g^3*B*b^2/(1/(d
*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d^3/i^2/(a*d-b*c)^5/g^3*A/(d*x+c)*a*
b*c+3*d^2*e/i^2/(a*d-b*c)^5/g^3*A*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)*a-2*d^3/i^2/(a*d-b*c)^5/g^3*B/(d*x+c)*a*b*c+1/2*e^2/i^2/(a*d-b*c)^5/g^3*
B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/
d*e)*c
```

maxima [B] time = 2.37, size = 1721, normalized size = 4.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, algor
ithm="maxima")
```

```
[Out] 1/2*B*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*
b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^
3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 -
2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d
^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*
a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x + a)/((b^4*c^4 - 4*a*
b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2
*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3
 + a^4*d^4)*g^3*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 1/2*A*((6*b^2*
d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*b*d^2)*x)/((b^
5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^3*i^2*x^3 + (b
^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)*g
^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d^2 + a^4*b*c*d
^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^2
- a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*
a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2*log(d*x + c)/
((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^
3*i^2)) - 1/4*(b^3*c^3 - 12*a*b^2*c^2*d + 15*a^2*b*c*d^2 - 4*a^3*d^3 - 6*(b
^3*c*d^2 - a*b^2*d^3)*x^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a
*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a)^2 + 6*(b^3*d^3*
x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*
d^3)*x)*log(d*x + c)^2 - 3*(3*b^3*c^2*d - 2*a*b^2*c*d^2 - a^2*b*d^3)*x - 6*
(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2
 + a^2*b*d^3)*x)*log(b*x + a) + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 +
 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*
c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(
b*x + a))*log(d*x + c))*B/(a^2*b^4*c^5*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 +
6*a^4*b^2*c^3*d^2*g^3*i^2 - 4*a^5*b*c^2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (
b^6*c^4*d*g^3*i^2 - 4*a*b^5*c^3*d^2*g^3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4
*a^3*b^3*c*d^4*g^3*i^2 + a^4*b^2*d^5*g^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*
b^5*c^4*d*g^3*i^2 - 2*a^2*b^4*c^3*d^2*g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 -
 7*a^4*b^2*c*d^4*g^3*i^2 + 2*a^5*b*d^5*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2
- 7*a^2*b^4*c^4*d*g^3*i^2 + 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g
^3*i^2 - 2*a^5*b*c*d^4*g^3*i^2 + a^6*d^5*g^3*i^2)*x)
```

mupad [B] time = 9.11, size = 984, normalized size = 2.70

$$\frac{3\,B\,b\,d^2\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2}{2\,g^3\,i^2\,(a\,d-b\,c)^4}-\frac{A\,a^2\,d^2}{g^3\,i^2\,(a\,d-b\,c)^3\,(a+b\,x)^2\,(c+d\,x)}+\frac{A\,b^2\,c^2}{2\,g^3\,i^2\,(a\,d-b\,c)^3\,(a+b\,x)^2\,(c+d\,x)}+\frac{}{g^3\,i^2\,(a\,d-b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^3*(c*i + d*i*x)^2),
x)
```

```
[Out] (3*B*b*d^2*log((e*(a + b*x))/(c + d*x))^2)/(2*g^3*i^2*(a*d - b*c)^4) - (A*b
*d^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*6i)/(g^3*i^2*(a*d - b*c
)^4) - (B*b*d^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*3i)/(g^3*i^2
*(a*d - b*c)^4) - (A*a^2*d^2)/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x))
 + (A*b^2*c^2)/(2*g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) + (B*a^2*d^2
)/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) + (B*b^2*c^2)/(4*g^3*i^2*(a
*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (B*a*d*log((e*(a + b*x))/(c + d*x)))/(
g^3*i^2*(a*d - b*c)^2*(a + b*x)^2*(c + d*x)) - (B*b*c*log((e*(a + b*x))/(c
+ d*x)))/(2*g^3*i^2*(a*d - b*c)^2*(a + b*x)^2*(c + d*x)) - (3*A*b^2*d^2*x^2
)/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (3*B*b^2*d^2*x^2)/(2*g^3*
i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (5*A*a*b*c*d)/(2*g^3*i^2*(a*d -
b*c)^3*(a + b*x)^2*(c + d*x)) - (11*B*a*b*c*d)/(4*g^3*i^2*(a*d - b*c)^3*(a
+ b*x)^2*(c + d*x)) - (3*B*b*d*x*log((e*(a + b*x))/(c + d*x)))/(2*g^3*i^2*(
a*d - b*c)^2*(a + b*x)^2*(c + d*x)) - (3*B*b^2*d^2*x^2*log((e*(a + b*x))/(c
 + d*x)))/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (9*A*a*b*d^2*x)/(
2*g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (3*B*a*b*d^2*x)/(4*g^3*i^2
*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (3*A*b^2*c*d*x)/(2*g^3*i^2*(a*d - b
*c)^3*(a + b*x)^2*(c + d*x)) - (9*B*b^2*c*d*x)/(4*g^3*i^2*(a*d - b*c)^3*(a
+ b*x)^2*(c + d*x)) - (3*B*a*b*c*d*log((e*(a + b*x))/(c + d*x)))/(g^3*i^2*(
a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (3*B*a*b*d^2*x*log((e*(a + b*x))/(c +
 d*x)))/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x)) - (3*B*b^2*c*d*x*log(
(e*(a + b*x))/(c + d*x)))/(g^3*i^2*(a*d - b*c)^3*(a + b*x)^2*(c + d*x))
```

sympy [B] time = 52.28, size = 1562, normalized size = 4.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3/(d*i*x+c*i)**2,x)
```

```
[Out] 3*B*b*d**2*log(e*(a + b*x)/(c + d*x))**2/(2*a**4*d**4*g**3*i**2 - 8*a**3*b*
c*d**3*g**3*i**2 + 12*a**2*b**2*c**2*d**2*g**3*i**2 - 8*a*b**3*c**3*d*g**3*
i**2 + 2*b**4*c**4*g**3*i**2) - 3*b*d**2*(2*A + B)*log(x + (6*A*a*b*d**3 +
6*A*b**2*c*d**2 + 3*B*a*b*d**3 + 3*B*b**2*c*d**2 - 3*a**5*b*d**7*(2*A + B)/
(a*d - b*c)**4 + 15*a**4*b**2*c*d**6*(2*A + B)/(a*d - b*c)**4 - 30*a**3*b**
3*c**2*d**5*(2*A + B)/(a*d - b*c)**4 + 30*a**2*b**4*c**3*d**4*(2*A + B)/(a*
d - b*c)**4 - 15*a*b**5*c**4*d**3*(2*A + B)/(a*d - b*c)**4 + 3*b**6*c**5*d*
*2*(2*A + B)/(a*d - b*c)**4)/(12*A*b**2*d**3 + 6*B*b**2*d**3))/(2*g**3*i**2
*(a*d - b*c)**4) + 3*b*d**2*(2*A + B)*log(x + (6*A*a*b*d**3 + 6*A*b**2*c*d*
*2 + 3*B*a*b*d**3 + 3*B*b**2*c*d**2 + 3*a**5*b*d**7*(2*A + B)/(a*d - b*c)**
4 - 15*a**4*b**2*c*d**6*(2*A + B)/(a*d - b*c)**4 + 30*a**3*b**3*c**2*d**5*(
2*A + B)/(a*d - b*c)**4 - 30*a**2*b**4*c**3*d**4*(2*A + B)/(a*d - b*c)**4 +
 15*a*b**5*c**4*d**3*(2*A + B)/(a*d - b*c)**4 - 3*b**6*c**5*d**2*(2*A + B)/
(a*d - b*c)**4)/(12*A*b**2*d**3 + 6*B*b**2*d**3))/(2*g**3*i**2*(a*d - b*c)*
*4) + (-2*B*a**2*d**2 - 5*B*a*b*c*d - 9*B*a*b*d**2*x + B*b**2*c**2 - 3*B*b*
*2*c*d*x - 6*B*b**2*d**2*x**2)*log(e*(a + b*x)/(c + d*x))/(2*a**5*c*d**3*g*
*3*i**2 + 2*a**5*d**4*g**3*i**2*x - 6*a**4*b*c**2*d**2*g**3*i**2 - 2*a**4*b
*c*d**3*g**3*i**2*x + 4*a**4*b*d**4*g**3*i**2*x**2 + 6*a**3*b**2*c**3*d*g**
3*i**2 - 6*a**3*b**2*c**2*d**2*g**3*i**2*x - 10*a**3*b**2*c*d**3*g**3*i**2*
x**2 + 2*a**3*b**2*d**4*g**3*i**2*x**3 - 2*a**2*b**3*c**4*g**3*i**2 + 10*a*
*2*b**3*c**3*d*g**3*i**2*x + 6*a**2*b**3*c**2*d**2*g**3*i**2*x**2 - 6*a**2*
b**3*c*d**3*g**3*i**2*x**3 - 4*a*b**4*c**4*g**3*i**2*x + 2*a*b**4*c**3*d*g*
*3*i**2*x**2 + 6*a*b**4*c**2*d**2*g**3*i**2*x**3 - 2*b**5*c**4*g**3*i**2*x*
*2 - 2*b**5*c**3*d*g**3*i**2*x**3) - (4*A*a**2*d**2 + 10*A*a*b*c*d - 2*A*b*
*2*c**2 - 4*B*a**2*d**2 + 11*B*a*b*c*d - B*b**2*c**2 + x**2*(12*A*b**2*d**2
```

```
 + 6*B*b**2*d**2) + x*(18*A*a*b*d**2 + 6*A*b**2*c*d + 3*B*a*b*d**2 + 9*B*b*
*2*c*d))/(4*a**5*c*d**3*g**3*i**2 - 12*a**4*b*c**2*d**2*g**3*i**2 + 12*a**3
*b**2*c**3*d*g**3*i**2 - 4*a**2*b**3*c**4*g**3*i**2 + x**3*(4*a**3*b**2*d**
4*g**3*i**2 - 12*a**2*b**3*c*d**3*g**3*i**2 + 12*a*b**4*c**2*d**2*g**3*i**2
 - 4*b**5*c**3*d*g**3*i**2) + x**2*(8*a**4*b*d**4*g**3*i**2 - 20*a**3*b**2*
c*d**3*g**3*i**2 + 12*a**2*b**3*c**2*d**2*g**3*i**2 + 4*a*b**4*c**3*d*g**3*
i**2 - 4*b**5*c**4*g**3*i**2) + x*(4*a**5*d**4*g**3*i**2 - 4*a**4*b*c*d**3*
g**3*i**2 - 12*a**3*b**2*c**2*d**2*g**3*i**2 + 20*a**2*b**3*c**3*d*g**3*i**
2 - 8*a*b**4*c**4*g**3*i**2))
```

3.46 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^4(ci+dix)^2}\,dx$

Optimal. Leaf size=457

$$-\frac{b^4(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3g^4i^2(a+bx)^3(bc-ad)^5}+\frac{2b^3d(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^4i^2(a+bx)^2(bc-ad)^5}-\frac{6b^2d^2(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^4i^2(a+bx)(bc-ad)^5}+\frac{d^4}{}$$

```
[Out] -B*d^4*(b*x+a)/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-6*b^2*B*d^2*(d*x+c)/(-a*d+b*c)^
5/g^4/i^2/(b*x+a)+b^3*B*d*(d*x+c)^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-1/9*b^4*
B*(d*x+c)^3/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3+2*b*B*d^3*ln((b*x+a)/(d*x+c))^2/
(-a*d+b*c)^5/g^4/i^2+d^4*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g
^4/i^2/(d*x+c)-6*b^2*d^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g
^4/i^2/(b*x+a)+2*b^3*d*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5/g
^4/i^2/(b*x+a)^2-1/3*b^4*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^5
/g^4/i^2/(b*x+a)^3-4*b*d^3*ln((b*x+a)/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/
(-a*d+b*c)^5/g^4/i^2
```

Rubi [C] time = 1.36, antiderivative size = 705, normalized size of antiderivative = 1.54, number of steps used = 36, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{4bBd^3\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^4i^2(bc-ad)^5}-\frac{4bBd^3\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^4i^2(bc-ad)^5}-\frac{4bd^3\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^4i^2(bc-ad)^5}-\frac{d^3\left(B\log\left(\frac{e(}{c}\right.\right.}{g^4i^2(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^4*(c*i + d*i*x)^2),
x]
```

```
[Out] -(b*B)/(9*(b*c - a*d)^2*g^4*i^2*(a + b*x)^3) + (2*b*B*d)/(3*(b*c - a*d)^3*g
^4*i^2*(a + b*x)^2) - (13*b*B*d^2)/(3*(b*c - a*d)^4*g^4*i^2*(a + b*x)) + (B
*d^3)/((b*c - a*d)^4*g^4*i^2*(c + d*x)) - (10*b*B*d^3*Log[a + b*x])/(3*(b*c
 - a*d)^5*g^4*i^2) + (2*b*B*d^3*Log[a + b*x]^2)/((b*c - a*d)^5*g^4*i^2) - (
b*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*(b*c - a*d)^2*g^4*i^2*(a + b*x)^
3) + (b*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^3*g^4*i^2*(a +
 b*x)^2) - (3*b*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^4*g^
4*i^2*(a + b*x)) - (d^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^
4*g^4*i^2*(c + d*x)) - (4*b*d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c +
d*x)]))/((b*c - a*d)^5*g^4*i^2) + (10*b*B*d^3*Log[c + d*x])/(3*(b*c - a*d)^
5*g^4*i^2) - (4*b*B*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b
*c - a*d)^5*g^4*i^2) + (4*b*d^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c
+ d*x])/((b*c - a*d)^5*g^4*i^2) + (2*b*B*d^3*Log[c + d*x]^2)/((b*c - a*d)^5
*g^4*i^2) - (4*b*B*d^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c -
 a*d)^5*g^4*i^2) - (4*b*B*d^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b
*c - a*d)^5*g^4*i^2) - (4*b*B*d^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((
b*c - a*d)^5*g^4*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
```

```
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(46c+46dx)^2(ag+bgx)^4}\,dx = \int\left(\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2116(bc-ad)^2g^4(a+bx)^4} - \frac{b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1058(bc-ad)^3g^4(a+bx)^3} + \frac{3b^2d^2\left(A+B\log\right.}{2116(bc-ad)^4}\right.$$

$$= -\frac{\left(b^2d^3\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}dx}{529(bc-ad)^5g^4} + \frac{\left(bd^4\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}dx}{529(bc-ad)^5g^4} + \frac{\left(3b^2d^2\right)\int\frac{A+B\log\left(\frac{e(}{}\right.}{(a+bx)}}{2116(bc-ad)^4}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{6348(bc-ad)^2g^4(a+bx)^3} + \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2116(bc-ad)^3g^4(a+bx)^2} - \frac{3bd^2\left(A+B\log\right.}{2116(bc-ad)^4g^4(}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{6348(bc-ad)^2g^4(a+bx)^3} + \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2116(bc-ad)^3g^4(a+bx)^2} - \frac{3bd^2\left(A+B\log\right.}{2116(bc-ad)^4g^4(}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{6348(bc-ad)^2g^4(a+bx)^3} + \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2116(bc-ad)^3g^4(a+bx)^2} - \frac{3bd^2\left(A+B\log\right.}{2116(bc-ad)^4g^4(}$$

$$= -\frac{bB}{19044(bc-ad)^2g^4(a+bx)^3} + \frac{bBd}{3174(bc-ad)^3g^4(a+bx)^2} - \frac{13bBd^2}{6348(bc-ad)^4g^4}$$

$$= -\frac{bB}{19044(bc-ad)^2g^4(a+bx)^3} + \frac{bBd}{3174(bc-ad)^3g^4(a+bx)^2} - \frac{13bBd^2}{6348(bc-ad)^4g^4}$$

$$= -\frac{bB}{19044(bc-ad)^2g^4(a+bx)^3} + \frac{bBd}{3174(bc-ad)^3g^4(a+bx)^2} - \frac{13bBd^2}{6348(bc-ad)^4g^4}$$

$$= -\frac{bB}{19044(bc-ad)^2g^4(a+bx)^3} + \frac{bBd}{3174(bc-ad)^3g^4(a+bx)^2} - \frac{13bBd^2}{6348(bc-ad)^4g^4}$$

Mathematica [C] time = 1.34, size = 520, normalized size = 1.14

$$-\frac{36bd^3\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) - \frac{9d^3(ad-bc)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{c+dx} - 36bd^3\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) + \cdots}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^4*(c*i + d*i*
x)^2),x]
```

```
[Out] -1/9*((b*B*(b*c - a*d)^3)/(a + b*x)^3 - (6*b*B*d*(b*c - a*d)^2)/(a + b*x)^2
 + (27*b^2*B*c*d^2)/(a + b*x) - (27*a*b*B*d^3)/(a + b*x) + (12*b*B*d^2*(b*c
 - a*d))/(a + b*x) - (9*b*B*c*d^3)/(c + d*x) + (9*a*B*d^4)/(c + d*x) + 30*b
*B*d^3*Log[a + b*x] + (3*b*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)
]))/(a + b*x)^3 - (9*b*d*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])
)/(a + b*x)^2 + (27*b*d^2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))
/(a + b*x) - (9*d^3*(-(b*c) + a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c
```

```
 + d*x) + 36*b*d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 30*b
*B*d^3*Log[c + d*x] - 36*b*d^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c +
 d*x] - 18*b*B*d^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c -
 a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*b*B*d^3*((2*Log[
(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (
b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^5*g^4*i^2)
```

fricas [B] time = 0.77, size = 1019, normalized size = 2.23

$$-\frac{(3\,A+B)b^4c^4-9\,(2\,A+B)ab^3c^3d+54\,(A+B)a^2b^2c^2d^2-5\,(6\,A+11\,B)a^3bcd^3-9\,(A-B)a^4d^4+6\,\Big((6\,A+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algor
ithm="fricas")
```

```
[Out] -1/9*((3*A + B)*b^4*c^4 - 9*(2*A + B)*a*b^3*c^3*d + 54*(A + B)*a^2*b^2*c^2*
d^2 - 5*(6*A + 11*B)*a^3*b*c*d^3 - 9*(A - B)*a^4*d^4 + 6*((6*A + 5*B)*b^4*c
*d^3 - (6*A + 5*B)*a*b^3*d^4)*x^3 + 3*((6*A + 11*B)*b^4*c^2*d^2 + 8*(3*A +
B)*a*b^3*c*d^3 - (30*A + 19*B)*a^2*b^2*d^4)*x^2 + 18*(B*b^4*d^4*x^4 + B*a^3
*b*c*d^3 + (B*b^4*c*d^3 + 3*B*a*b^3*d^4)*x^3 + 3*(B*a*b^3*c*d^3 + B*a^2*b^2
*d^4)*x^2 + (3*B*a^2*b^2*c*d^3 + B*a^3*b*d^4)*x)*log((b*e*x + a*e)/(d*x + c
))^2 - ((6*A + 5*B)*b^4*c^3*d - 27*(2*A + 3*B)*a*b^3*c^2*d^2 - 3*(6*A - 19*
B)*a^2*b^2*c*d^3 + (66*A + 19*B)*a^3*b*d^4)*x + 3*(2*(6*A + 5*B)*b^4*d^4*x^
4 + B*b^4*c^4 - 6*B*a*b^3*c^3*d + 18*B*a^2*b^2*c^2*d^2 + 12*A*a^3*b*c*d^3 -
 3*B*a^4*d^4 + 2*((6*A + 11*B)*b^4*c*d^3 + 9*(2*A + B)*a*b^3*d^4)*x^3 + 6*(
B*b^4*c^2*d^2 + 3*(2*A + 3*B)*a*b^3*c*d^3 + 6*A*a^2*b^2*d^4)*x^2 - 2*(B*b^4
*c^3*d - 9*B*a*b^3*c^2*d^2 - 18*(A + B)*a^2*b^2*c*d^3 - 6*(A - B)*a^3*b*d^4
)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^8*c^5*d - 5*a*b^7*c^4*d^2 + 10*a^2*b
^6*c^3*d^3 - 10*a^3*b^5*c^2*d^4 + 5*a^4*b^4*c*d^5 - a^5*b^3*d^6)*g^4*i^2*x^
4 + (b^8*c^6 - 2*a*b^7*c^5*d - 5*a^2*b^6*c^4*d^2 + 20*a^3*b^5*c^3*d^3 - 25*
a^4*b^4*c^2*d^4 + 14*a^5*b^3*c*d^5 - 3*a^6*b^2*d^6)*g^4*i^2*x^3 + 3*(a*b^7*
c^6 - 4*a^2*b^6*c^5*d + 5*a^3*b^5*c^4*d^2 - 5*a^5*b^3*c^2*d^4 + 4*a^6*b^2*c
*d^5 - a^7*b*d^6)*g^4*i^2*x^2 + (3*a^2*b^6*c^6 - 14*a^3*b^5*c^5*d + 25*a^4*
b^4*c^4*d^2 - 20*a^5*b^3*c^3*d^3 + 5*a^6*b^2*c^2*d^4 + 2*a^7*b*c*d^5 - a^8*
d^6)*g^4*i^2*x + (a^3*b^5*c^6 - 5*a^4*b^4*c^5*d + 10*a^5*b^3*c^4*d^2 - 10*a
^6*b^2*c^3*d^3 + 5*a^7*b*c^2*d^4 - a^8*c*d^5)*g^4*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.05, size = 2068, normalized size = 4.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)
```

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

```
i^2/(a*d-b*c)^6/g^4*B*b^2*c+2*d^4/i^2/(a*d-b*c)^6/g^4*B*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)/(d*x+c)*a*b*c+1/3*d*e^3/i^2/(a*d-b*c)^6/g^4*B*b^4/(1/(d*x+c)*a
*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d^3/i^2/(a*
d-b*c)^6/g^4*A*b^2*c+2*d*e^2/i^2/(a*d-b*c)^6/g^4*B*b^4/(1/(d*x+c)*a*e-1/(d*
x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^3/i^2/(a*d-b*c)^6
/g^4*A/(d*x+c)*b^2*c^2-1/3*e^3/i^2/(a*d-b*c)^6/g^4*A*b^5/(1/(d*x+c)*a*e-1/(
d*x+c)*b*c/d*e+b/d*e)^3*c+d^3/i^2/(a*d-b*c)^6/g^4*B/(d*x+c)*b^2*c^2+d^3/i^2
/(a*d-b*c)^6/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c+2*d^4/i^2/(a*d-b*c
)^6/g^4*B*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-2*d^3/i^2/(a*d-b*c)^6/g^4*B
*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-4*d^3/i^2/(a*d-b*c)^6/g^4*A*b^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^5/i^2/(a*d-b*c)^6/g^4*B*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)/(d*x+c)*a^2+4*d^4/i^2/(a*d-b*c)^6/g^4*A*b*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)*a-d^4/i^2/(a*d-b*c)^6/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b
*a-1/9*e^3/i^2/(a*d-b*c)^6/g^4*B*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^3*c-d^5/i^2/(a*d-b*c)^6/g^4*A/(d*x+c)*a^2+d^5/i^2/(a*d-b*c)^6/g^4*B/(d*x+
c)*a^2+d^4/i^2/(a*d-b*c)^6/g^4*B*b*a-d^4/i^2/(a*d-b*c)^6/g^4*A*b*a+6*d^3*e/
i^2/(a*d-b*c)^6/g^4*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)*a+2*d*e^2/i^2/(a*d-b*c)^6/g^4*A*b^4/(1/(d*x+c)*a*e-1
/(d*x+c)*b*c/d*e+b/d*e)^2*c+6*d^3*e/i^2/(a*d-b*c)^6/g^4*A*b^2/(1/(d*x+c)*a*
e-1/(d*x+c)*b*c/d*e+b/d*e)*a-6*d^2*e/i^2/(a*d-b*c)^6/g^4*A*b^3/(1/(d*x+c)*a
*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+6*d^3*e/i^2/(a*d-b*c)^6/g^4*B*b^2/(1/(d*x+c)*
a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d^4/i^2/(a*d-b*c)^6/g^4*A/(d*x+c)*a*b*c-2*
d^4/i^2/(a*d-b*c)^6/g^4*B/(d*x+c)*a*b*c-d^2*e^2/i^2/(a*d-b*c)^6/g^4*B*b^3/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+d*e^2/i^2/(a*d-b*c)^6/g^4*B*b^4/
(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+1/9*d*e^3/i^2/(a*d-b*c)^6/g^4*B
*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-6*d^2*e/i^2/(a*d-b*c)^6/g^
4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-2*d^2*e^2/i^2/(a*d-b*c)^6
/g^4*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+1/3*d*e^3/i^2/(a*d-b
*c)^6/g^4*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-1/3*e^3/i^2/(a*
d-b*c)^6/g^4*B*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)*c-d^3/i^2/(a*d-b*c)^6/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)/(d*x+c)*b^2*c^2
```

maxima [B] time = 3.45, size = 2560, normalized size = 5.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, algor
ithm="maxima")

[Out] -1/3*B*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c*d^2 + 3*a^3*
d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2*c*d^2 - 11*a
^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4*a^3*b^4*
c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2*b^5*c^3*d
^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^4*i^2*x^3 + 3
*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*c^2*d^3 - 3*a
^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^3*b^4*c^4*d +
 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^5)*g^4*i^2*x
+ (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2*d^3 + a^
7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^
2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2) - 12
*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3
*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2))*log(b*e*x/(d*x + c) + a*e
/(d*x + c)) - 1/3*A*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c
*d^2 + 3*a^3*d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2
*c*d^2 - 11*a^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3
 - 4*a^3*b^4*c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*
a^2*b^5*c^3*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^
4*i^2*x^3 + 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*
```

```
c^2*d^3 - 3*a^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^
3*b^4*c^4*d + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^
5)*g^4*i^2*x + (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b
*c^2*d^3 + a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*
c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*
g^4*i^2) - 12*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3
*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2)) - 1/9*(b^4*c
^4 - 9*a*b^3*c^3*d + 54*a^2*b^2*c^2*d^2 - 55*a^3*b*c*d^3 + 9*a^4*d^4 + 30*(
b^4*c*d^3 - a*b^3*d^4)*x^3 + 3*(11*b^4*c^2*d^2 + 8*a*b^3*c*d^3 - 19*a^2*b^2
*d^4)*x^2 - 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 +
 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b
*x + a)^2 - 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 +
 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(d
*x + c)^2 - (5*b^4*c^3*d - 81*a*b^3*c^2*d^2 + 57*a^2*b^2*c*d^3 + 19*a^3*b*d
^4)*x + 30*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(
a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x +
 a) - 6*(5*b^4*d^4*x^4 + 5*a^3*b*c*d^3 + 5*(b^4*c*d^3 + 3*a*b^3*d^4)*x^3 +
15*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 5*(3*a^2*b^2*c*d^3 + a^3*b*d^4)*x - 6*
(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3
 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a))*log(d*
x + c))*B/(a^3*b^5*c^6*g^4*i^2 - 5*a^4*b^4*c^5*d*g^4*i^2 + 10*a^5*b^3*c^4*d
^2*g^4*i^2 - 10*a^6*b^2*c^3*d^3*g^4*i^2 + 5*a^7*b*c^2*d^4*g^4*i^2 - a^8*c*d
^5*g^4*i^2 + (b^8*c^5*d*g^4*i^2 - 5*a*b^7*c^4*d^2*g^4*i^2 + 10*a^2*b^6*c^3*
d^3*g^4*i^2 - 10*a^3*b^5*c^2*d^4*g^4*i^2 + 5*a^4*b^4*c*d^5*g^4*i^2 - a^5*b^
3*d^6*g^4*i^2)*x^4 + (b^8*c^6*g^4*i^2 - 2*a*b^7*c^5*d*g^4*i^2 - 5*a^2*b^6*c
^4*d^2*g^4*i^2 + 20*a^3*b^5*c^3*d^3*g^4*i^2 - 25*a^4*b^4*c^2*d^4*g^4*i^2 +
14*a^5*b^3*c*d^5*g^4*i^2 - 3*a^6*b^2*d^6*g^4*i^2)*x^3 + 3*(a*b^7*c^6*g^4*i^
2 - 4*a^2*b^6*c^5*d*g^4*i^2 + 5*a^3*b^5*c^4*d^2*g^4*i^2 - 5*a^5*b^3*c^2*d^4
*g^4*i^2 + 4*a^6*b^2*c*d^5*g^4*i^2 - a^7*b*d^6*g^4*i^2)*x^2 + (3*a^2*b^6*c^
6*g^4*i^2 - 14*a^3*b^5*c^5*d*g^4*i^2 + 25*a^4*b^4*c^4*d^2*g^4*i^2 - 20*a^5*
b^3*c^3*d^3*g^4*i^2 + 5*a^6*b^2*c^2*d^4*g^4*i^2 + 2*a^7*b*c*d^5*g^4*i^2 - a
^8*d^6*g^4*i^2)*x)
```

mupad [B] time = 12.44, size = 1679, normalized size = 3.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^4*(c*i + d*i*x)^2),
x)
```

```
[Out] (2*B*b*d^3*log((e*(a + b*x))/(c + d*x))^2)/(g^4*i^2*(a*d - b*c)^2*(a^3*d^3
- b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (log((e*(a + b*x))/(c + d*x))
*(x*((4*B)/(3*g^4*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (4*B*b*d^3*(((2*a^
2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2))*(a*d +
b*c) + (a*c*(a*d - b*c))/d^2))/(g^4*i^2*(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 +
3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) + (B*(3*a*d + b*c))/(3*g^4*i^2*(a^2*b*d^3
+ b^3*c^2*d - 2*a*b^2*c*d^2)) + (4*B*b^2*d^2*x^3)/(g^4*i^2*(a*d - b*c)*(a^3
*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (4*B*b*d^3*x^2*(b*d*((2*
a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)) + ((a
*d + b*c)*(a*d - b*c))/d^2))/(g^4*i^2*(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*
a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (4*B*a*b*c*d^3*((2*a^2*d^2 + b^2*c^2 - 3*a*
b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)))/(g^4*i^2*(a*d - b*c)^2*(a^3*
d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))))/(b^2*x^4 + (a^3*c)/(b*d)
+ (x*(a^3*d + 3*a^2*b*c))/(b*d) + (x^3*(b^3*c + 3*a*b^2*d))/(b*d) + (x^2*(3
*a*b^2*c + 3*a^2*b*d))/(b*d)) - (b*d^3*atan((b*d^3*((a^5*d^5*g^4*i^2 + b^5*
c^5*g^4*i^2 - 3*a*b^4*c^4*d*g^4*i^2 - 3*a^4*b*c*d^4*g^4*i^2 + 2*a^2*b^3*c^3
*d^2*g^4*i^2 + 2*a^3*b^2*c^2*d^3*g^4*i^2)/(a^4*d^4*g^4*i^2 + b^4*c^4*g^4*i^
2 - 4*a*b^3*c^3*d*g^4*i^2 - 4*a^3*b*c*d^3*g^4*i^2 + 6*a^2*b^2*c^2*d^2*g^4*i
^2) + 2*b*d*x)*(6*A + 5*B)*(a^4*d^4*g^4*i^2 + b^4*c^4*g^4*i^2 - 4*a*b^3*c^3
```

```
*d*g^4*i^2 - 4*a^3*b*c*d^3*g^4*i^2 + 6*a^2*b^2*c^2*d^2*g^4*i^2)*2i)/(g^4*i^
2*(a*d - b*c)^5*(12*A*b*d^3 + 10*B*b*d^3)))*(6*A + 5*B)*4i)/(3*g^4*i^2*(a*d
 - b*c)^5) - ((9*A*a^3*d^3 + 3*A*b^3*c^3 - 9*B*a^3*d^3 + B*b^3*c^3 - 15*A*a
*b^2*c^2*d + 39*A*a^2*b*c*d^2 - 8*B*a*b^2*c^2*d + 46*B*a^2*b*c*d^2)/(3*(a*d
 - b*c)) + (x*(66*A*a^2*b*d^3 + 19*B*a^2*b*d^3 - 6*A*b^3*c^2*d - 5*B*b^3*c^
2*d + 48*A*a*b^2*c*d^2 + 76*B*a*b^2*c*d^2))/(3*(a*d - b*c)) + (x^2*(30*A*a*
b^2*d^3 + 19*B*a*b^2*d^3 + 6*A*b^3*c*d^2 + 11*B*b^3*c*d^2))/(a*d - b*c) + (
2*x^3*(6*A*b^3*d^3 + 5*B*b^3*d^3))/(a*d - b*c))/(x*(3*a^6*d^4*g^4*i^2 - 9*a
^2*b^4*c^4*g^4*i^2 + 24*a^3*b^3*c^3*d*g^4*i^2 - 18*a^4*b^2*c^2*d^2*g^4*i^2)
 - x^2*(9*a*b^5*c^4*g^4*i^2 - 9*a^5*b*d^4*g^4*i^2 - 18*a^2*b^4*c^3*d*g^4*i^
2 + 18*a^4*b^2*c*d^3*g^4*i^2) - x^3*(3*b^6*c^4*g^4*i^2 - 9*a^4*b^2*d^4*g^4*
i^2 + 24*a^3*b^3*c*d^3*g^4*i^2 - 18*a^2*b^4*c^2*d^2*g^4*i^2) + x^4*(3*a^3*b
^3*d^4*g^4*i^2 - 3*b^6*c^3*d*g^4*i^2 + 9*a*b^5*c^2*d^2*g^4*i^2 - 9*a^2*b^4*
c*d^3*g^4*i^2) - 3*a^3*b^3*c^4*g^4*i^2 + 3*a^6*c*d^3*g^4*i^2 + 9*a^4*b^2*c^
3*d*g^4*i^2 - 9*a^5*b*c^2*d^2*g^4*i^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4/(d*i*x+c*i)**2,x)
[Out] Timed out
```

3.47 $\int \frac{(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ci+dix)^3}\,dx$

Optimal. Leaf size=361

$$\frac{b^2g^3(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(3B\log\left(\frac{e(a+bx)}{c+dx}\right)+3A+B\right)}{d^4i^3}+\frac{bg^3(3A+B)(a+bx)(bc-ad)}{d^3i^3(c+dx)}+\frac{g^3(a+bx)^2(bc-ad)\left(\right.}{2d^2i}$$

```
[Out] -3/4*B*(-a*d+b*c)*g^3*(b*x+a)^2/d^2/i^3/(d*x+c)^2-3*b*B*(-a*d+b*c)*g^3*(b*x
+a)/d^3/i^3/(d*x+c)+b*(3*A+B)*(-a*d+b*c)*g^3*(b*x+a)/d^3/i^3/(d*x+c)+3*b*B*
(-a*d+b*c)*g^3*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/d^3/i^3/(d*x+c)+g^3*(b*x+a)^3*
(A+B*ln(e*(b*x+a)/(d*x+c)))/d/i^3/(d*x+c)^2+1/2*(-a*d+b*c)*g^3*(b*x+a)^2*(3
*A+B+3*B*ln(e*(b*x+a)/(d*x+c)))/d^2/i^3/(d*x+c)^2+b^2*(-a*d+b*c)*g^3*ln((-a
*d+b*c)/b/(d*x+c))*(3*A+B+3*B*ln(e*(b*x+a)/(d*x+c)))/d^4/i^3+3*b^2*B*(-a*d+
b*c)*g^3*polylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i^3
```

Rubi [A] time = 0.73, antiderivative size = 442, normalized size of antiderivative = 1.22, number of steps used = 22, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{3b^2Bg^3(bc-ad)\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^4i^3}-\frac{3b^2g^3(bc-ad)\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^4i^3}-\frac{3bg^3(bc-ad)^2\left(B\log\right.}{d^4i^3(c+}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^3,
x]
```

```
[Out] (A*b^3*g^3*x)/(d^3*i^3) - (B*(b*c - a*d)^3*g^3)/(4*d^4*i^3*(c + d*x)^2) + (
5*b*B*(b*c - a*d)^2*g^3)/(2*d^4*i^3*(c + d*x)) + (5*b^2*B*(b*c - a*d)*g^3*L
og[a + b*x])/(2*d^4*i^3) + (b^2*B*g^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)
])/(d^3*i^3) + ((b*c - a*d)^3*g^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*
d^4*i^3*(c + d*x)^2) - (3*b*(b*c - a*d)^2*g^3*(A + B*Log[(e*(a + b*x))/(c +
 d*x)]))/(d^4*i^3*(c + d*x)) - (7*b^2*B*(b*c - a*d)*g^3*Log[c + d*x])/(2*d^
4*i^3) + (3*b^2*B*(b*c - a*d)*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c +
 d*x])/(d^4*i^3) - (3*b^2*(b*c - a*d)*g^3*(A + B*Log[(e*(a + b*x))/(c + d*x
)])*Log[c + d*x])/(d^4*i^3) - (3*b^2*B*(b*c - a*d)*g^3*Log[c + d*x]^2)/(2*d
^4*i^3) + (3*b^2*B*(b*c - a*d)*g^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(
d^4*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(47c+47dx)^3}\,dx = \int \left(\frac{b^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{103823d^3} + \frac{(-bc+ad)^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right.}{103823d^3(c+dx)^3}\right.$$

$$= \frac{\left(b^3g^3\right)\int\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)dx}{103823d^3} - \frac{\left(3b^2(bc-ad)g^3\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}}{103823d^3}$$

$$= \frac{Ab^3g^3x}{103823d^3} + \frac{(bc-ad)^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{207646d^4(c+dx)^2} - \frac{3b(bc-ad)^2g^3\left(A\right.}{103823d}$$

$$= \frac{Ab^3g^3x}{103823d^3} + \frac{b^2Bg^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{103823d^3} + \frac{(bc-ad)^3g^3\left(A+B\log\right.}{207646d^4(c+dx}$$

$$= \frac{Ab^3g^3x}{103823d^3} + \frac{b^2Bg^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{103823d^3} + \frac{(bc-ad)^3g^3\left(A+B\log\right.}{207646d^4(c+dx}$$

$$= \frac{Ab^3g^3x}{103823d^3} - \frac{B(bc-ad)^3g^3}{415292d^4(c+dx)^2} + \frac{5bB(bc-ad)^2g^3}{207646d^4(c+dx)} + \frac{5b^2B(bc-a}{20}$$

$$= \frac{Ab^3g^3x}{103823d^3} - \frac{B(bc-ad)^3g^3}{415292d^4(c+dx)^2} + \frac{5bB(bc-ad)^2g^3}{207646d^4(c+dx)} + \frac{5b^2B(bc-a}{20}$$

$$= \frac{Ab^3g^3x}{103823d^3} - \frac{B(bc-ad)^3g^3}{415292d^4(c+dx)^2} + \frac{5bB(bc-ad)^2g^3}{207646d^4(c+dx)} + \frac{5b^2B(bc-a}{20}$$

$$= \frac{Ab^3g^3x}{103823d^3} - \frac{B(bc-ad)^3g^3}{415292d^4(c+dx)^2} + \frac{5bB(bc-ad)^2g^3}{207646d^4(c+dx)} + \frac{5b^2B(bc-a}{20}$$

Mathematica [A] time = 0.44, size = 317, normalized size = 0.88

$$g^3\left(-12b^2(bc-ad)\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) - \frac{12b(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{c+dx} + \frac{2(bc-ad)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{(c+dx)^2} + 4b\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i
*x)^3,x]
```

```
[Out] (g^3*(4*A*b^3*d*x - (B*(b*c - a*d)^3)/(c + d*x)^2 + (10*b*B*(b*c - a*d)^2)/
(c + d*x) + 10*b^2*B*(b*c - a*d)*Log[a + b*x] + 4*b^2*B*d*(a + b*x)*Log[(e*
(a + b*x))/(c + d*x)] + (2*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)
```

```
]))/(c + d*x)^2 - (12*b*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))
/(c + d*x) - 14*b^2*B*(b*c - a*d)*Log[c + d*x] - 12*b^2*(b*c - a*d)*(A + B*
Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 6*b^2*B*(b*c - a*d)*((2*Log[(d
*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*
(c + d*x))/(b*c - a*d)])))/(4*d^4*i^3)
```

fricas [F] time = 0.99, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ab^3g^3x^3 + 3\,Aab^2g^3x^2 + 3\,Aa^2bg^3x + Aa^3g^3 + \left(Bb^3g^3x^3 + 3\,Bab^2g^3x^2 + 3\,Ba^2bg^3x + Ba^3g^3\right)\log\left(\frac{bex+}{dx+}\right.}{d^3i^3x^3 + 3\,cd^2i^3x^2 + 3\,c^2di^3x + c^3i^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algor
ithm="fricas")
```

```
[Out] integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 +
 (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log((b*e
*x + a*e)/(d*x + c)))/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*
i^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.14, size = 1815, normalized size = 5.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^3,x)
```

```
[Out] -2/d^3*e*g^3/i^3*B*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(
d*x+c)*b*c*e)/(d*x+c)*c*a+1/d^4*e*g^3/i^3*B*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/
d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*c^2+1/d^2*e*g^3/i^3*B*b^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)/(d*x+c)*a^2
+1/4/d*g^3/i^3*B/(d*x+c)^2*a^3-1/2/d*g^3/i^3*A/(d*x+c)^2*a^3-1/d^4*e*g^3/i^
3*B*b^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c
-3/2/d^3*g^3/i^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2-1/d^
4*e*g^3/i^3*A*b^4/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*c-3/d^4*g^3/i^3*B*b^3*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*c^2+3/2/d^2*g^3/i^3*A/(d*x+c)^2*a^2*
b*c+1/2/d^4*g^3/i^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-3/4
/d^2*g^3/i^3*B/(d*x+c)^2*a^2*b*c-3/2/d^3*g^3/i^3*A/(d*x+c)^2*a*b^2*c^2+6/d^
3*g^3/i^3*A*b^2/(d*x+c)*a*c-5/d^3*g^3/i^3*B*b^2/(d*x+c)*a*c+3/4/d^3*g^3/i^3
*B/(d*x+c)^2*b^2*c^2*a-3/d^3*g^3/i^3*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+3/d^4*g^3/i^3*B*b^3*ln(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*
c+1/d^3*e*g^3/i^3*A*b^3/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a-3/d^2*g^3/i^3*B
*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+3/2/d^2*g^3/i^3*B*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c+6/d^3*g^3/i^3*B*b^2*ln(b/d*e+(a*d-b
*c)/(d*x+c)/d*e)/(d*x+c)*a*c+1/d^3*e*g^3/i^3*B*b^3*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)/(1/(d*x+c)*a*d*e-1/(d*x+c)*b*c*e)*a+3/d^4*g^3/i^3*A*b^3*ln(-b*e+(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c-3/d^3*g^3/i^3*B*b^2*dilog(-(-b*e+(b/d*e+(a*
```

```
d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+3/d^4*g^3/i^3*B*b^3*dilog(-(-b*e+(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)*d)/b/e)*c-5/2/d^3*g^3/i^3*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*a+1/d^4*g^3/i^3*B*b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c+5/2
/d^4*g^3/i^3*B*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/2/d*g^3/i^3*B*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+5/2/d^4*g^3/i^3*A*b^3*c-5/2/d^3*g^3
/i^3*A*b^2*a+9/4/d^3*g^3/i^3*B*b^2*a-9/4/d^4*g^3/i^3*B*b^3*c+5/2/d^2*g^3/i^
3*B*b/(d*x+c)*a^2+5/2/d^4*g^3/i^3*B*b^3/(d*x+c)*c^2-1/4/d^4*g^3/i^3*B/(d*x+
c)^2*b^3*c^3-3/d^4*g^3/i^3*A*b^3/(d*x+c)*c^2+1/2/d^4*g^3/i^3*A/(d*x+c)^2*b^
3*c^3-3/d^2*g^3/i^3*A*b/(d*x+c)*a^2-3/d^3*g^3/i^3*A*b^2*ln(-b*e+(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)*d)*a-1/d^3*g^3/i^3*B*b^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*d)*a
```

maxima [B] time = 2.31, size = 2037, normalized size = 5.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algor
ithm="maxima")
```

```
[Out] -3/4*B*a^2*b*g^3*(2*(2*d*x + c)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^4*i
^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d
^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*
d^2 - a*c^2*d^3)*i^3) - 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*
a*b*c*d^3 + a^2*d^4)*i^3) + 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2
 - 2*a*b*c*d^3 + a^2*d^4)*i^3)) - 1/2*A*b^3*g^3*((6*c^2*d*x + 5*c^3)/(d^6*i^
3*x^2 + 2*c*d^5*i^3*x + c^2*d^4*i^3) - 2*x/(d^3*i^3) + 6*c*log(d*x + c)/(d^
4*i^3)) + 1/4*B*a^3*g^3*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2
 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) - 2*log(b*e*x
/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 2*b
^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x +
 c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) + 3/2*A*a*b^2*g^3*((4*c*d*x
+ 3*c^2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2*log(d*x + c)/(d^3*
i^3)) - 3/2*(2*d*x + c)*A*a^2*b*g^3/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*
i^3) - 1/2*A*a^3*g^3/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 1/2*(6*a^3
*b^2*d^3*g^3*log(e) - (6*g^3*log(e) + 7*g^3)*b^5*c^3 + (18*g^3*log(e) + 19*
g^3)*a*b^4*c^2*d - 2*(9*g^3*log(e) + 7*g^3)*a^2*b^3*c*d^2)*B*log(d*x + c)/(
b^2*c^2*d^4*i^3 - 2*a*b*c*d^5*i^3 + a^2*d^6*i^3) + 1/4*(4*(b^5*c^2*d^3*g^3*
log(e) - 2*a*b^4*c*d^4*g^3*log(e) + a^2*b^3*d^5*g^3*log(e))*B*x^3 + 8*(b^5*
c^3*d^2*g^3*log(e) - 2*a*b^4*c^2*d^3*g^3*log(e) + a^2*b^3*c*d^4*g^3*log(e))
*B*x^2 - 2*((4*g^3*log(e) - 5*g^3)*b^5*c^4*d - 20*(g^3*log(e) - g^3)*a*b^4*
c^3*d^2 + (28*g^3*log(e) - 27*g^3)*a^2*b^3*c^2*d^3 - 12*(g^3*log(e) - g^3)*
a^3*b^2*c*d^4)*B*x + 6*((b^5*c^3*d^2*g^3 - 3*a*b^4*c^2*d^3*g^3 + 3*a^2*b^3*
c*d^4*g^3 - a^3*b^2*d^5*g^3)*B*x^2 + 2*(b^5*c^4*d*g^3 - 3*a*b^4*c^3*d^2*g^3
 + 3*a^2*b^3*c^2*d^3*g^3 - a^3*b^2*c*d^4*g^3)*B*x + (b^5*c^5*g^3 - 3*a*b^4*
c^4*d*g^3 + 3*a^2*b^3*c^3*d^2*g^3 - a^3*b^2*c^2*d^3*g^3)*B)*log(d*x + c)^2
- ((10*g^3*log(e) - 9*g^3)*b^5*c^5 - (38*g^3*log(e) - 35*g^3)*a*b^4*c^4*d +
 (46*g^3*log(e) - 47*g^3)*a^2*b^3*c^3*d^2 - 3*(6*g^3*log(e) - 7*g^3)*a^3*b^
2*c^2*d^3)*B + 2*(2*(b^5*c^2*d^3*g^3 - 2*a*b^4*c*d^4*g^3 + a^2*b^3*d^5*g^3)
*B*x^3 + (9*b^5*c^3*d^2*g^3 - 21*a*b^4*c^2*d^3*g^3 + 12*a^2*b^3*c*d^4*g^3 +
 2*a^3*b^2*d^5*g^3)*B*x^2 + 2*(3*b^5*c^4*d*g^3 - 3*a*b^4*c^3*d^2*g^3 - 6*a^
2*b^3*c^2*d^3*g^3 + 8*a^3*b^2*c*d^4*g^3)*B*x + (6*a*b^4*c^4*d*g^3 - 15*a^2*
b^3*c^3*d^2*g^3 + 11*a^3*b^2*c^2*d^3*g^3)*B)*log(b*x + a) - 2*(2*(b^5*c^2*d
^3*g^3 - 2*a*b^4*c*d^4*g^3 + a^2*b^3*d^5*g^3)*B*x^3 + 4*(b^5*c^3*d^2*g^3 -
2*a*b^4*c^2*d^3*g^3 + a^2*b^3*c*d^4*g^3)*B*x^2 - 4*(b^5*c^4*d*g^3 - 5*a*b^4
*c^3*d^2*g^3 + 7*a^2*b^3*c^2*d^3*g^3 - 3*a^3*b^2*c*d^4*g^3)*B*x - (5*b^5*c^
5*g^3 - 19*a*b^4*c^4*d*g^3 + 23*a^2*b^3*c^3*d^2*g^3 - 9*a^3*b^2*c^2*d^3*g^3
)*B)*log(d*x + c))/(b^2*c^4*d^4*i^3 - 2*a*b*c^3*d^5*i^3 + a^2*c^2*d^6*i^3 +
 (b^2*c^2*d^6*i^3 - 2*a*b*c*d^7*i^3 + a^2*d^8*i^3)*x^2 + 2*(b^2*c^3*d^5*i^3
 - 2*a*b*c^2*d^6*i^3 + a^2*c*d^7*i^3)*x) - 3*(b^3*c*g^3 - a*b^2*d*g^3)*(log
```

```
(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c -
a*d)))*B/(d^4*i^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a g+b g x\right)^3 \left(A+B \ln\left(\frac{e (a+b x)}{c+d x}\right)\right)}{(c i+d i x)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^3,
x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^3,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

3.48 $\int \frac{(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ci+dix)^3}\,dx$

Optimal. Leaf size=251

$$-\frac{b^2g^2\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^3i^3}-\frac{g^2(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2di^3(c+dx)^2}-\frac{Abg^2(a+bx)}{d^2i^3(c+dx)}-\frac{b^2Bg^2\mathrm{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right.}{d^3i^3}$$

```
[Out] 1/4*B*g^2*(b*x+a)^2/d/i^3/(d*x+c)^2-A*b*g^2*(b*x+a)/d^2/i^3/(d*x+c)+b*B*g^2
*(b*x+a)/d^2/i^3/(d*x+c)-b*B*g^2*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/d^2/i^3/(d*x
+c)-1/2*g^2*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/d/i^3/(d*x+c)^2-b^2*g^2*l
n((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^3/i^3-b^2*B*g^2*polyl
og(2,d*(b*x+a)/b/(d*x+c))/d^3/i^3
```

Rubi [A] time = 0.61, antiderivative size = 340, normalized size of antiderivative = 1.35, number of steps used = 19, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{b^2Bg^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^3i^3}+\frac{b^2g^2\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^3i^3}+\frac{2bg^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^3i^3(c+dx)}-\frac{g^2(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^3,
x]
```

```
[Out] (B*(b*c - a*d)^2*g^2)/(4*d^3*i^3*(c + d*x)^2) - (3*b*B*(b*c - a*d)*g^2)/(2*
d^3*i^3*(c + d*x)) - (3*b^2*B*g^2*Log[a + b*x])/(2*d^3*i^3) - ((b*c - a*d)^
2*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*d^3*i^3*(c + d*x)^2) + (2*b*
(b*c - a*d)*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^3*i^3*(c + d*x)) +
 (3*b^2*B*g^2*Log[c + d*x])/(2*d^3*i^3) - (b^2*B*g^2*Log[-((d*(a + b*x))/(b
*c - a*d))]*Log[c + d*x])/(d^3*i^3) + (b^2*g^2*(A + B*Log[(e*(a + b*x))/(c
+ d*x)])*Log[c + d*x])/(d^3*i^3) + (b^2*B*g^2*Log[c + d*x]^2)/(2*d^3*i^3) -
 (b^2*B*g^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
```

```
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(48c+48dx)^3}\,dx = \int \left(\frac{(-bc+ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{110592d^2(c+dx)^3} - \frac{b(bc-ad)g^2\left(A+B\log\left(\right.\right.}{55296d^2(c+dx)^2}\right.$$

$$= \frac{(b^2g^2)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}\,dx}{110592d^2} - \frac{(b(bc-ad)g^2)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^2}\,dx}{55296d^2} + \frac{(}{}$$

$$= -\frac{(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{221184d^3(c+dx)^2} + \frac{b(bc-ad)g^2\left(A+B\log\left(\frac{e(a+}{c+d}\right.\right.}{55296d^3(c+dx)}$$

$$= -\frac{(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{221184d^3(c+dx)^2} + \frac{b(bc-ad)g^2\left(A+B\log\left(\frac{e(a+}{c+d}\right.\right.}{55296d^3(c+dx)}$$

$$= -\frac{(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{221184d^3(c+dx)^2} + \frac{b(bc-ad)g^2\left(A+B\log\left(\frac{e(a+}{c+d}\right.\right.}{55296d^3(c+dx)}$$

$$= \frac{B(bc-ad)^2g^2}{442368d^3(c+dx)^2} - \frac{bB(bc-ad)g^2}{73728d^3(c+dx)} - \frac{b^2Bg^2\log(a+bx)}{73728d^3} - \frac{(bc-}{}$$

$$= \frac{B(bc-ad)^2g^2}{442368d^3(c+dx)^2} - \frac{bB(bc-ad)g^2}{73728d^3(c+dx)} - \frac{b^2Bg^2\log(a+bx)}{73728d^3} - \frac{(bc-}{}$$

$$= \frac{B(bc-ad)^2g^2}{442368d^3(c+dx)^2} - \frac{bB(bc-ad)g^2}{73728d^3(c+dx)} - \frac{b^2Bg^2\log(a+bx)}{73728d^3} - \frac{(bc-}{}$$

$$= \frac{B(bc-ad)^2g^2}{442368d^3(c+dx)^2} - \frac{bB(bc-ad)g^2}{73728d^3(c+dx)} - \frac{b^2Bg^2\log(a+bx)}{73728d^3} - \frac{(bc-}{}$$

Mathematica [A] time = 0.34, size = 245, normalized size = 0.98

$$\frac{g^2\left(4b^2\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) + \frac{8b(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{c+dx} - \frac{2(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{(c+dx)^2} - 2b^2B\left(2\mathrm{Li}_2\left(\frac{b(c+}{bc-}\right.\right.\right.}{4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i
*x)^3,x]
```

```
[Out] (g^2*((B*(b*c - a*d)^2)/(c + d*x)^2 - (6*b*B*(b*c - a*d))/(c + d*x) - 6*b^2
*B*Log[a + b*x] - (2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c
 + d*x)^2 + (8*b*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c + d*x
) + 6*b^2*B*Log[c + d*x] + 4*b^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c
 + d*x] - 2*b^2*B*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log
[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(4*d^3*i^3)
```

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{Ab^2g^2x^2 + 2\,Aabg^2x + Aa^2g^2 + \left(Bb^2g^2x^2 + 2\,Babg^2x + Ba^2g^2\right)\log\left(\frac{bex+ae}{dx+c}\right)}{d^3i^3x^3 + 3\,cd^2i^3x^2 + 3\,c^2di^3x + c^3i^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algor
ithm="fricas")
```

```
[Out] integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*
a*b*g^2*x + B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/(d^3*i^3*x^3 + 3*c*d^2
*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 1569, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^3,x)
```

```
[Out] -1/2*g^2/(a*d-b*c)/i^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3-1/2*
g^2/(a*d-b*c)/i^3*A/(d*x+c)^2*a^3+1/4*g^2/(a*d-b*c)/i^3*B/(d*x+c)^2*a^3-3/2
/d^2*g^2/(a*d-b*c)/i^3*A*b^2*a+3/2/d*g^2/(a*d-b*c)/i^3*B*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c+4/d^2*g^2/(a*d-b*c)/i^3*B*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c+3/2/d^3*g^2/(a*d-b*c)/i^3*A*b^3*c+5/4/d^2*g^
2/(a*d-b*c)/i^3*B*b^2*a-5/4/d^3*g^2/(a*d-b*c)/i^3*B*b^3*c-3/2/d^2*g^2/(a*d-
b*c)/i^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+1/d^3*g^2/(a*d-b*c)/i^3*A*
b^3*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*c+1/d^3*g^2/(a*d-b*c)/i^3*B*b^
3*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c+3/2/d^3*g^2/(a*d-b*c
)/i^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c-1/d^2*g^2/(a*d-b*c)/i^3*B*b^2
*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+1/2/d^3*g^2/(a*d-b*c)
/i^3*A/(d*x+c)^2*b^3*c^3+3/2/d*g^2/(a*d-b*c)/i^3*B*b/(d*x+c)*a^2+3/2/d^3*g^
2/(a*d-b*c)/i^3*B*b^3/(d*x+c)*c^2-1/d^2*g^2/(a*d-b*c)/i^3*A*b^2*ln(-b*e+(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a-2/d*g^2/(a*d-b*c)/i^3*A*b/(d*x+c)*a^2-2/d^3
*g^2/(a*d-b*c)/i^3*A*b^3/(d*x+c)*c^2-1/4/d^3*g^2/(a*d-b*c)/i^3*B/(d*x+c)^2*
b^3*c^3-3/2/d^2*g^2/(a*d-b*c)/i^3*A/(d*x+c)^2*a*b^2*c^2+4/d^2*g^2/(a*d-b*c)
/i^3*A*b^2/(d*x+c)*a*c+3/2/d*g^2/(a*d-b*c)/i^3*A/(d*x+c)^2*a^2*b*c-3/4/d*g^
2/(a*d-b*c)/i^3*B/(d*x+c)^2*a^2*b*c-3/d^2*g^2/(a*d-b*c)/i^3*B*b^2/(d*x+c)*a
*c+3/4/d^2*g^2/(a*d-b*c)/i^3*B/(d*x+c)^2*a*b^2*c^2-1/d^2*g^2/(a*d-b*c)/i^3*
B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*d)/b/e)*a-2/d*g^2/(a*d-b*c)/i^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x
+c)*a^2+1/d^3*g^2/(a*d-b*c)/i^3*B*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(
-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*c-2/d^3*g^2/(a*d-b*c)/i^3*B*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2+1/2/d^3*g^2/(a*d-b*c)/i^3*B*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-3/2/d^2*g^2/(a*d-b*c)/i^3*B*
ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}Babg^2\left(\frac{2(2dx+c)\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)}{d^4i^3x^2+2cd^3i^3x+c^2d^2i^3}-\frac{bc^2-3acd+2\left(bcd-2ad^2\right)x}{\left(bcd^4-ad^5\right)i^3x^2+2\left(bc^2d^3-acd^4\right)i^3x+\left(bc^3d^2-ac^2d^3\right)i^3}-\frac{2\left(b^2c-\right.}{\left(b^2c^2d^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algor
ithm="maxima")
```

```
[Out] -1/2*B*a*b*g^2*(2*(2*d*x + c)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^4*i^3
*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2
)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^
2 - a*c^2*d^3)*i^3) - 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*
b*c*d^3 + a^2*d^4)*i^3) + 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 -
2*a*b*c*d^3 + a^2*d^4)*i^3)) + 1/4*B*a^2*g^2*((2*b*d*x + 3*b*c - a*d)/((b*c
*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^
2)*i^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 + 2*c*d^2*i^3
*x + c^2*d*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i
^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) + 1/2*A
*b^2*g^2*((4*c*d*x + 3*c^2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2
*log(d*x + c)/(d^3*i^3)) - 1/2*B*b^2*g^2*(((d^2*x^2 + 2*c*d*x + c^2)*log(d*
x + c)^2 + (4*c*d*x + 3*c^2)*log(d*x + c))/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c
^2*d^3*i^3) - 2*integrate(1/2*(2*d^2*x^2*log(b*x + a) + 2*d^2*x^2*log(e) +
4*c*d*x + 3*c^2)/(d^5*i^3*x^3 + 3*c*d^4*i^3*x^2 + 3*c^2*d^3*i^3*x + c^3*d^2
*i^3), x)) - (2*d*x + c)*A*a*b*g^2/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i
^3) - 1/2*A*a^2*g^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a g+b g x\right)^2 \left(A+B \ln\left(\frac{e (a+b x)}{c+d x}\right)\right)}{(c i+d i x)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^3,
x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^3,
 x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{g^2 \left(\int \frac{Aa^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\, dx + \int \frac{Ab^2x^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\, dx + \int \frac{Ba^2 \log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\, dx + \int \frac{2Aabx}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\, dx + \right.}{i^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**3,x)
```

```
[Out] g**2*(Integral(A*a**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) +
 Integral(A*b**2*x**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) +
 Integral(B*a**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c**3 + 3*c**2*d*x +
3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*A*a*b*x/(c**3 + 3*c**2*d*x + 3*
c*d**2*x**2 + d**3*x**3), x) + Integral(B*b**2*x**2*log(a*e/(c + d*x) + b*e
*x/(c + d*x))/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integra
l(2*B*a*b*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c**3 + 3*c**2*d*x + 3*c*d
**2*x**2 + d**3*x**3), x))/i**3
```

3.49 $\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(ci+dix)^3}\,dx$

Optimal. Leaf size=85

$$\frac{g(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2i^3(c+dx)^2(bc-ad)}-\frac{Bg(a+bx)^2}{4i^3(c+dx)^2(bc-ad)}$$

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

Rubi [B] time = 0.29, antiderivative size = 191, normalized size of antiderivative = 2.25, number of steps used = 10, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2528, 2525, 12, 44}

$$-\frac{bg\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i^3(c+dx)}+\frac{g(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2d^2i^3(c+dx)^2}+\frac{b^2Bg\log(a+bx)}{2d^2i^3(bc-ad)}-\frac{b^2Bg\log(c+dx)}{2d^2i^3(bc-ad)}-\frac{Bg(bc-ad)}{4d^2i^3(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x)^3,x]
```

```
[Out] -(B*(b*c - a*d)*g)/(4*d^2*i^3*(c + d*x)^2) + (b*B*g)/(2*d^2*i^3*(c + d*x))
+ (b^2*B*g*Log[a + b*x])/(2*d^2*(b*c - a*d)*i^3) + ((b*c - a*d)*g*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]))/(2*d^2*i^3*(c + d*x)^2) - (b*g*(A + B*Log[(e*(
a + b*x))/(c + d*x)]))/(d^2*i^3*(c + d*x)) - (b^2*B*g*Log[c + d*x])/(2*d^2*
(b*c - a*d)*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(49c+49dx)^3}dx = \int \left(\frac{(-bc+ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{117649d(c+dx)^3} + \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{117649d(c+dx)^2}\right) dx$$

$$= \frac{(bg)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^2}dx}{117649d} - \frac{((bc-ad)g)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^3}dx}{117649d}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{235298d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{117649d^2(c+dx)} + \frac{(bBg)}{}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{235298d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{117649d^2(c+dx)} + \frac{(bB(bc}{}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{235298d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{117649d^2(c+dx)} + \frac{(bB(bc}{}$$

$$= -\frac{B(bc-ad)g}{470596d^2(c+dx)^2} + \frac{bBg}{235298d^2(c+dx)} + \frac{b^2Bg\log(a+bx)}{235298d^2(bc-ad)} + \frac{(b}{}$$

Mathematica [B] time = 0.15, size = 207, normalized size = 2.44

$$\frac{g\left(-\frac{b\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2(c+dx)} + \frac{(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2d^2(c+dx)^2} - \frac{B\left(\frac{2b^2\log(a+bx)}{bc-ad} - \frac{2b^2\log(c+dx)}{bc-ad} + \frac{bc-ad}{(c+dx)^2} + \frac{2b}{c+dx}\right)}{4d^2} + \frac{bB\left(\frac{b\log(a+bx)}{bc-ad} - \frac{b\log(c+dx)}{bc-ad} + \frac{1}{c+dx}\right)}{d^2}\right)}{i^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(c*i + d*i*x
)^3,x]
```

```
[Out] (g*(((b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*d^2*(c + d*x)^2)
- (b*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^2*(c + d*x)) + (b*B*((c + d*x
)^(-1) + (b*Log[a + b*x])/(b*c - a*d) - (b*Log[c + d*x])/(b*c - a*d)))/d^2
- (B*((b*c - a*d)/(c + d*x)^2 + (2*b)/(c + d*x) + (2*b^2*Log[a + b*x])/(b*c
 - a*d) - (2*b^2*Log[c + d*x])/(b*c - a*d)))/(4*d^2)))/i^3
```

fricas [B] time = 0.71, size = 185, normalized size = 2.18

$$-\frac{2\left((2A-B)b^2cd-(2A-B)abd^2\right)gx+\left((2A-B)b^2c^2-(2A-B)a^2d^2\right)g-2\left(Bb^2d^2gx^2+2Babd^2gx+Ba^2d\right.}{4\left(\left(bcd^4-ad^5\right)i^3x^2+2\left(bc^2d^3-acd^4\right)i^3x+\left(bc^3d^2-ac^2d^3\right)i^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorit
hm="fricas")
```

```
[Out] -1/4*(2*((2*A - B)*b^2*c*d - (2*A - B)*a*b*d^2)*g*x + ((2*A - B)*b^2*c^2 -
(2*A - B)*a^2*d^2)*g - 2*(B*b^2*d^2*g*x^2 + 2*B*a*b*d^2*g*x + B*a^2*d^2*g)*
log((b*e*x + a*e)/(d*x + c)))/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a
*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3)
```

giac [A] time = 1.07, size = 152, normalized size = 1.79

$$\frac{1}{4}\left(\frac{2(bxe+ae)^2Bgi\log\left(\frac{bxe+ae}{dx+c}\right)}{(dx+c)^2} + \frac{2(bxe+ae)^2Agi}{(dx+c)^2} - \frac{(bxe+ae)^2Bgi}{(dx+c)^2}\right)\left(\frac{bc}{(bce-ade)(bc-ad)} - \frac{ad}{(bce-ade)(bc-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorit
hm="giac")
```

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

maple [B] time = 0.05, size = 1049, normalized size = 12.34

$$-\frac{B\,a^{3}dg\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\,(ad-bc)^{2}\,(dx+c)^{2}\,i^{3}}+\frac{3B\,a^{2}bcg\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\,(ad-bc)^{2}\,(dx+c)^{2}\,i^{3}}-\frac{3Ba\,b^{2}c^{2}g\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\,(ad-bc)^{2}\,(dx+c)^{2}\,d\,i^{3}}+\frac{B\,b^{3}c^{3}g\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\,(ad-bc)^{2}\,(dx+c)^{2}\,d^{2}i^{3}}-\frac{}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^3,x)
```

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

maxima [B] time = 1.20, size = 567, normalized size = 6.67

$$-\frac{1}{4}\,Bbg\left(\frac{2\,(2\,dx+c)\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)}{d^{4}i^{3}x^{2}+2\,cd^{3}i^{3}x+c^{2}d^{2}i^{3}}-\frac{bc^{2}-3\,acd+2\left(bcd-2\,ad^{2}\right)x}{\left(bcd^{4}-ad^{5}\right)i^{3}x^{2}+2\left(bc^{2}d^{3}-acd^{4}\right)i^{3}x+\left(bc^{3}d^{2}-ac^{2}d^{3}\right)i^{3}}-\frac{2\left(b^{2}c-2\right.}{\left(b^{2}c^{2}d^{2}-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorit
hm="maxima")
```

```
[Out] -1/4*B*b*g*(2*(2*d*x + c)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^4*i^3*x^2
 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)
/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 -
a*c^2*d^3)*i^3) - 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*
d^3 + a^2*d^4)*i^3) + 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*
b*c*d^3 + a^2*d^4)*i^3)) + 1/4*B*a*g*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a
*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3)
- 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2
*d*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*
b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) - 1/2*(2*d*x +
c)*A*b*g/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - 1/2*A*a*g/(d^3*i^3*x
^2 + 2*c*d^2*i^3*x + c^2*d*i^3)
```

mupad [B] time = 5.63, size = 198, normalized size = 2.33

$$-\frac{x\left(2\,A\,b\,d\,g-B\,b\,d\,g\right)+A\,a\,d\,g+A\,b\,c\,g-\frac{B\,a\,d\,g}{2}-\frac{B\,b\,c\,g}{2}}{2\,c^2\,d^2\,i^3+4\,c\,d^3\,i^3\,x+2\,d^4\,i^3\,x^2}-\frac{\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\left(\frac{B\,a\,g}{2\,d^2\,i^3}+\frac{B\,b\,c\,g}{2\,d^3\,i^3}+\frac{B\,b\,g\,x}{d^2\,i^3}\right)}{2\,c\,x+d\,x^2+\frac{c^2}{d}}+\frac{B\,b^2\,g\,\mathrm{atan}\left(\right.}{d^2\,i^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x))))/(c*i + d*i*x)^3,x)
```

```
[Out] (B*b^2*g*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*1i)/(d^2*i^3*(a*d - b*c
)) - (log((e*(a + b*x))/(c + d*x))*((B*a*g)/(2*d^2*i^3) + (B*b*c*g)/(2*d^3*
i^3) + (B*b*g*x)/(d^2*i^3)))/(2*c*x + d*x^2 + c^2/d) - (x*(2*A*b*d*g - B*b*
d*g) + A*a*d*g + A*b*c*g - (B*a*d*g)/2 - (B*b*c*g)/2)/(2*c^2*d^2*i^3 + 2*d^
4*i^3*x^2 + 4*c*d^3*i^3*x)
```

sympy [B] time = 5.76, size = 382, normalized size = 4.49

$$\frac{Bb^2g\log\left(x+\frac{-\frac{Ba^2b^2d^2g}{ad-bc}+\frac{2Bab^3cdg}{ad-bc}+Bab^2dg-\frac{Bb^4c^2g}{ad-bc}+Bb^3cg}{2Bb^3dg}\right)}{2d^2i^3\left(ad-bc\right)}-\frac{Bb^2g\log\left(x+\frac{\frac{Ba^2b^2d^2g}{ad-bc}-\frac{2Bab^3cdg}{ad-bc}+Bab^2dg+\frac{Bb^4c^2g}{ad-bc}+Bb^3cg}{2Bb^3dg}\right)}{2d^2i^3\left(ad-bc\right)}+\frac{-2Aa}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**3,x)
```

```
[Out] B*b**2*g*log(x + (-B*a**2*b**2*d**2*g/(a*d - b*c) + 2*B*a*b**3*c*d*g/(a*d -
 b*c) + B*a*b**2*d*g - B*b**4*c**2*g/(a*d - b*c) + B*b**3*c*g)/(2*B*b**3*d*
g))/(2*d**2*i**3*(a*d - b*c)) - B*b**2*g*log(x + (B*a**2*b**2*d**2*g/(a*d -
 b*c) - 2*B*a*b**3*c*d*g/(a*d - b*c) + B*a*b**2*d*g + B*b**4*c**2*g/(a*d -
b*c) + B*b**3*c*g)/(2*B*b**3*d*g))/(2*d**2*i**3*(a*d - b*c)) + (-2*A*a*d*g
- 2*A*b*c*g + B*a*d*g + B*b*c*g + x*(-4*A*b*d*g + 2*B*b*d*g))/(4*c**2*d**2*
i**3 + 8*c*d**3*i**3*x + 4*d**4*i**3*x**2) + (-B*a*d*g - B*b*c*g - 2*B*b*d*
g*x)*log(e*(a + b*x)/(c + d*x))/(2*c**2*d**2*i**3 + 4*c*d**3*i**3*x + 2*d**
4*i**3*x**2)
```

3.50 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ci+dix)^3}\,dx$

Optimal. Leaf size=144

$$-\frac{B\log\left(\frac{e(a+bx)}{c+dx}\right)+A}{2di^3(c+dx)^2}+\frac{b^2B\log(a+bx)}{2di^3(bc-ad)^2}-\frac{b^2B\log(c+dx)}{2di^3(bc-ad)^2}+\frac{bB}{2di^3(c+dx)(bc-ad)}+\frac{B}{4di^3(c+dx)^2}$$

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

Rubi [A] time = 0.10, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {2525, 12, 44}

$$-\frac{B\log\left(\frac{e(a+bx)}{c+dx}\right)+A}{2di^3(c+dx)^2}+\frac{b^2B\log(a+bx)}{2di^3(bc-ad)^2}-\frac{b^2B\log(c+dx)}{2di^3(bc-ad)^2}+\frac{bB}{2di^3(c+dx)(bc-ad)}+\frac{B}{4di^3(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/(c*i + d*i*x)^3,x]
```

```
[Out] B/(4*d*i^3*(c + d*x)^2) + (b*B)/(2*d*(b*c - a*d)*i^3*(c + d*x)) + (b^2*B*Lo
g[a + b*x])/(2*d*(b*c - a*d)^2*i^3) - (A + B*Log[(e*(a + b*x))/(c + d*x)])/
(2*d*i^3*(c + d*x)^2) - (b^2*B*Log[c + d*x])/(2*d*(b*c - a*d)^2*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(50c+50dx)^3}\,dx = -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{250000d(c+dx)^2} + \frac{B\int \frac{bc-ad}{2500(a+bx)(c+dx)^3}\,dx}{100d}$$
$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{250000d(c+dx)^2} + \frac{(B(bc-ad))\int \frac{1}{(a+bx)(c+dx)^3}\,dx}{250000d}$$
$$= -\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{250000d(c+dx)^2} + \frac{(B(bc-ad))\int \left(\frac{b^3}{(bc-ad)^3(a+bx)} - \frac{d}{(bc-ad)(c+dx)^3} - \frac{bd}{(bc-ad)^2(c+dx)^2}\right.}{250000d}$$
$$= \frac{B}{500000d(c+dx)^2} + \frac{bB}{250000d(bc-ad)(c+dx)} + \frac{b^2B\log(a+bx)}{250000d(bc-ad)^2} - \frac{A+B\log}{250000d(}$$

Mathematica [A] time = 0.12, size = 111, normalized size = 0.77

$$\frac{\frac{B\left(2b^2(c+dx)^2\log(a+bx)+(bc-ad)(-ad+3bc+2bdx)-2b^2(c+dx)^2\log(c+dx)\right)}{(bc-ad)^2} - 2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{4di^3(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/(c*i + d*i*x)^3,x]
```

```
[Out] (-2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + (B*((b*c - a*d)*(3*b*c - a*d + 2
*b*d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*x)^2*Log[c + d*x]))
/(b*c - a*d)^2)/(4*d*i^3*(c + d*x)^2)
```

fricas [A] time = 0.92, size = 221, normalized size = 1.53

$$-\frac{(2A-3B)b^2c^2 - 4(A-B)abcd + (2A-B)a^2d^2 - 2\left(Bb^2cd - Babd^2\right)x - 2\left(Bb^2d^2x^2 + 2Bb^2cdx + 2Babcd -\right.}{4\left(\left(b^2c^2d^3 - 2abcd^4 + a^2d^5\right)i^3x^2 + 2\left(b^2c^3d^2 - 2abc^2d^3 + a^2cd^4\right)i^3x + \left(b^2c^4d - 2abc^3d^2 + a^2c^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="fricas")
```

```
[Out] -1/4*((2*A - 3*B)*b^2*c^2 - 4*(A - B)*a*b*c*d + (2*A - B)*a^2*d^2 - 2*(B*b^
2*c*d - B*a*b*d^2)*x - 2*(B*b^2*d^2*x^2 + 2*B*b^2*c*d*x + 2*B*a*b*c*d - B*a
^2*d^2)*log((b*e*x + a*e)/(d*x + c)))/((b^2*c^2*d^3 - 2*a*b*c*d^4 + a^2*d^5
)*i^3*x^2 + 2*(b^2*c^3*d^2 - 2*a*b*c^2*d^3 + a^2*c*d^4)*i^3*x + (b^2*c^4*d
- 2*a*b*c^3*d^2 + a^2*c^2*d^3)*i^3)
```

giac [A] time = 0.94, size = 254, normalized size = 1.76

$$\frac{\left(\frac{4(bxe+ae)Bbie\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c} + \frac{4(bxe+ae)Abie}{dx+c} - \frac{4(bxe+ae)Bbie}{dx+c} - \frac{2(bxe+ae)^2Bdi\log\left(\frac{bxe+ae}{dx+c}\right)}{(dx+c)^2} - \frac{2(bxe+ae)^2Adi}{(dx+c)^2} + \frac{(bxe+ae)^2Bdi}{(dx+c)^2}\right)\left(\frac{b}{(bce-ade}\right.}{4(bce-ade)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="giac")
```

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

maple [B] time = 0.05, size = 746, normalized size = 5.18

$$-\frac{B\,a^{3}d^{2}\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\,(ad-bc)^{3}\,(dx+c)^{2}\,i^{3}}+\frac{3B\,a^{2}bcd\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\,(ad-bc)^{3}\,(dx+c)^{2}\,i^{3}}-\frac{3Ba\,b^{2}c^{2}\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\,(ad-bc)^{3}\,(dx+c)^{2}\,i^{3}}+\frac{B\,b^{3}c^{3}\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\,(ad-bc)^{3}\,(dx+c)^{2}\,d\,i^{3}}-\frac{}{2\,(a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(d*i*x+c*i)^3,x)
```

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

maxima [A] time = 1.13, size = 255, normalized size = 1.77

$$\frac{1}{4}\,B\left(\frac{2\,bdx+3\,bc-ad}{\left(bcd^{3}-ad^{4}\right)i^{3}x^{2}+2\left(bc^{2}d^{2}-acd^{3}\right)i^{3}x+\left(bc^{3}d-ac^{2}d^{2}\right)i^{3}}-\frac{2\,\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)}{d^{3}i^{3}x^{2}+2\,cd^{2}i^{3}x+c^{2}di^{3}}+\frac{2\,b^{2}\log\left(bx+\right.}{\left(b^{2}c^{2}d-2\,abcd^{2}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)^3,x, algorithm="maxima")
```

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

mupad [B] time = 5.43, size = 208, normalized size = 1.44

$$\frac{B\,b^{2}\,\mathrm{atanh}\left(\frac{2\,a^{2}\,d^{3}\,i^{3}-2\,b^{2}\,c^{2}\,d\,i^{3}}{2\,d\,i^{3}\,(a\,d-b\,c)^{2}}+\frac{2\,b\,d\,x}{a\,d-b\,c}\right)}{d\,i^{3}\,(a\,d-b\,c)^{2}}-\frac{B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)}{2\,d^{2}\,i^{3}\,\left(2\,c\,x+d\,x^{2}+\frac{c^{2}}{d}\right)}-\frac{\frac{2\,A\,a\,d-2\,A\,b\,c-B\,a\,d+3\,B\,b\,c}{2\,(a\,d-b\,c)}+\frac{B\,b\,d\,x}{a\,d-b\,c}}{2\,c^{2}\,d\,i^{3}+4\,c\,d^{2}\,i^{3}\,x+2\,d^{3}\,i^{3}\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/(c*i + d*i*x)^3,x)
```

```
[Out] (B*b^2*atanh((2*a^2*d^3*i^3 - 2*b^2*c^2*d*i^3)/(2*d*i^3*(a*d - b*c)^2) + (2
*b*d*x)/(a*d - b*c)))/(d*i^3*(a*d - b*c)^2) - (B*log((e*(a + b*x))/(c + d*x
)))/(2*d^2*i^3*(2*c*x + d*x^2 + c^2/d)) - ((2*A*a*d - 2*A*b*c - B*a*d + 3*B
*b*c)/(2*(a*d - b*c)) + (B*b*d*x)/(a*d - b*c))/(2*c^2*d*i^3 + 2*d^3*i^3*x^2
 + 4*c*d^2*i^3*x)
```

sympy [B] time = 2.58, size = 422, normalized size = 2.93

$$-\frac{Bb^2\log\left(x+\frac{-\frac{Ba^3b^2d^3}{(ad-bc)^2}+\frac{3Ba^2b^3cd^2}{(ad-bc)^2}-\frac{3Bab^4c^2d}{(ad-bc)^2}+Bab^2d+\frac{Bb^5c^3}{(ad-bc)^2}+Bb^3c}{2Bb^3d}\right)}{2di^3\,(ad-bc)^2}+\frac{Bb^2\log\left(x+\frac{\frac{Ba^3b^2d^3}{(ad-bc)^2}-\frac{3Ba^2b^3cd^2}{(ad-bc)^2}+\frac{3Bab^4c^2d}{(ad-bc)^2}+Bab^2d-\frac{Bb^5c^3}{(ad-bc)^2}+B}{2Bb^3d}\right)}{2di^3\,(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(d*i*x+c*i)**3,x)
```

```
[Out] -B*b**2*log(x + (-B*a**3*b**2*d**3/(a*d - b*c)**2 + 3*B*a**2*b**3*c*d**2/(a
*d - b*c)**2 - 3*B*a*b**4*c**2*d/(a*d - b*c)**2 + B*a*b**2*d + B*b**5*c**3/
(a*d - b*c)**2 + B*b**3*c)/(2*B*b**3*d))/(2*d*i**3*(a*d - b*c)**2) + B*b**2
*log(x + (B*a**3*b**2*d**3/(a*d - b*c)**2 - 3*B*a**2*b**3*c*d**2/(a*d - b*c
)**2 + 3*B*a*b**4*c**2*d/(a*d - b*c)**2 + B*a*b**2*d - B*b**5*c**3/(a*d - b
*c)**2 + B*b**3*c)/(2*B*b**3*d))/(2*d*i**3*(a*d - b*c)**2) - B*log(e*(a + b
*x)/(c + d*x))/(2*c**2*d*i**3 + 4*c*d**2*i**3*x + 2*d**3*i**3*x**2) + (-2*A
*a*d + 2*A*b*c + B*a*d - 3*B*b*c - 2*B*b*d*x)/(4*a*c**2*d**2*i**3 - 4*b*c**
3*d*i**3 + x**2*(4*a*d**4*i**3 - 4*b*c*d**3*i**3) + x*(8*a*c*d**3*i**3 - 8*
b*c**2*d**2*i**3))
```

3.51 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)(ci+dix)^3}\,dx$

Optimal. Leaf size=243

$$\frac{b^2\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{gi^3(bc-ad)^3}+\frac{d^2(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2gi^3(c+dx)^2(bc-ad)^3}-\frac{2bd(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{gi^3(c+dx)(bc-ad)^3}-\frac{b^2B\log}{2gi^3(b}$$

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

Rubi [C] time = 0.90, antiderivative size = 535, normalized size of antiderivative = 2.20, number of steps used = 28, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44}

$$\frac{b^2B\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{gi^3(bc-ad)^3}+\frac{b^2B\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{gi^3(bc-ad)^3}+\frac{b^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{gi^3(bc-ad)^3}-\frac{b^2\log(c+dx)\left(B\log\right.}{gi^3(bc-a}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)*(c*i + d*i*x)^3),x]
```

```
[Out] -B/(4*(b*c - a*d)*g*i^3*(c + d*x)^2) - (3*b*B)/(2*(b*c - a*d)^2*g*i^3*(c +
d*x)) - (3*b^2*B*Log[a + b*x])/(2*(b*c - a*d)^3*g*i^3) - (b^2*B*Log[a + b*x
]^2)/(2*(b*c - a*d)^3*g*i^3) + (A + B*Log[(e*(a + b*x))/(c + d*x)])/(2*(b*c
 - a*d)*g*i^3*(c + d*x)^2) + (b*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c
 - a*d)^2*g*i^3*(c + d*x)) + (b^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c
+ d*x)]))/((b*c - a*d)^3*g*i^3) + (3*b^2*B*Log[c + d*x])/(2*(b*c - a*d)^3*g
*i^3) + (b^2*B*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)
^3*g*i^3) - (b^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c -
 a*d)^3*g*i^3) - (b^2*B*Log[c + d*x]^2)/(2*(b*c - a*d)^3*g*i^3) + (b^2*B*Lo
g[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) + (b^2*B*P
olyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g*i^3) + (b^2*B*Pol
yLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(51c+51dx)^3(ag+bgx)}dx = \int \left(\frac{b^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{132651(bc-ad)^3g(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{132651(bc-ad)g(c+dx)^3} - \frac{bd\left(A+B\log\right.}{132651(bc-ad)}\right.$$

$$= \frac{b^3\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}dx}{132651(bc-ad)^3g} - \frac{\left(b^2d\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}dx}{132651(bc-ad)^3g} - \frac{(bd)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^2}dx}{132651(bc-ad)^2g} -$$

$$= \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{265302(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{132651(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+bx)\left(A+\right.}{132651(bc}$$

$$= \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{265302(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{132651(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+bx)\left(A+\right.}{132651(bc}$$

$$= \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{265302(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{132651(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+bx)\left(A+\right.}{132651(bc}$$

$$= -\frac{B}{530604(bc-ad)g(c+dx)^2} - \frac{bB}{88434(bc-ad)^2g(c+dx)} - \frac{b^2B\log(a+bx)}{88434(bc-ad)^3g} +$$

$$= -\frac{B}{530604(bc-ad)g(c+dx)^2} - \frac{bB}{88434(bc-ad)^2g(c+dx)} - \frac{b^2B\log(a+bx)}{88434(bc-ad)^3g} +$$

$$= -\frac{B}{530604(bc-ad)g(c+dx)^2} - \frac{bB}{88434(bc-ad)^2g(c+dx)} - \frac{b^2B\log(a+bx)}{88434(bc-ad)^3g} -$$

$$= -\frac{B}{530604(bc-ad)g(c+dx)^2} - \frac{bB}{88434(bc-ad)^2g(c+dx)} - \frac{b^2B\log(a+bx)}{88434(bc-ad)^3g} -$$

Mathematica [C] time = 0.47, size = 418, normalized size = 1.72

$$\frac{4b^2(c+dx)^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) - 4b^2(c+dx)^2\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) + 2(bc-ad)^2\left(B\log\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)*(c*i + d*i*x)
^3),x]
```

```
[Out] (2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*b*(b*c - a*d)*(c
+ d*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*b^2*(c + d*x)^2*Log[a + b*x
]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4*b^2*(c + d*x)^2*(A + B*Log[(e*(a
 + b*x))/(c + d*x)])*Log[c + d*x] - 4*b*B*(c + d*x)*(b*c - a*d + b*(c + d*x
)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]) - B*((b*c - a*d)^2 + 2*b*(b*c -
a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*x)^2*Log[c +
 d*x]) - 2*b^2*B*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*
x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*B*(
c + d*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*
x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(4*(b*c - a*d)^3*g*i^3*(c +
d*x)^2)
```

fricas [A] time = 0.79, size = 355, normalized size = 1.46

$$\frac{(6\,A-7\,B)b^2c^2-8\,(A-B)abcd+(2\,A-B)a^2d^2+2\left(Bb^2d^2x^2+2\,Bb^2cdx+Bb^2c^2\right)\log\left(\frac{bex+ae}{dx+c}\right)^2+2\left((2\,A-3\right.}{4\left(\left(b^3c^3d^2-3\,ab^2c^2d^3+3\,a^2bcd^4-a^3d^5\right)gi^3x^2+2\left(b^3c^4d-3\,a\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorit
hm="fricas")
```

```
[Out] 1/4*((6*A - 7*B)*b^2*c^2 - 8*(A - B)*a*b*c*d + (2*A - B)*a^2*d^2 + 2*(B*b^2
*d^2*x^2 + 2*B*b^2*c*d*x + B*b^2*c^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*((
2*A - 3*B)*b^2*c*d - (2*A - 3*B)*a*b*d^2)*x + 2*((2*A - 3*B)*b^2*d^2*x^2 +
2*A*b^2*c^2 - 4*B*a*b*c*d + B*a^2*d^2 + 2*(2*(A - B)*b^2*c*d - B*a*b*d^2)*x
)*log((b*e*x + a*e)/(d*x + c)))/((b^3*c^3*d^2 - 3*a*b^2*c^2*d^3 + 3*a^2*b*c
*d^4 - a^3*d^5)*g*i^3*x^2 + 2*(b^3*c^4*d - 3*a*b^2*c^3*d^2 + 3*a^2*b*c^2*d^
3 - a^3*c*d^4)*g*i^3*x + (b^3*c^5 - 3*a*b^2*c^4*d + 3*a^2*b*c^3*d^2 - a^3*c
^2*d^3)*g*i^3)
```

giac [A] time = 0.74, size = 340, normalized size = 1.40

$$\frac{\left(2\,Bb^2ie^2\log\left(\frac{bxe+ae}{dx+c}\right)^2+4\,Ab^2ie^2\log\left(\frac{bxe+ae}{dx+c}\right)-\frac{8\,(bxe+ae)Bbdie\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c}-\frac{8\,(bxe+ae)Abdie}{dx+c}+\frac{8\,(bxe+ae)Bbdie}{dx+c}+\frac{2\,(bxe+ae\right.}{4\left(b^2c^2ge-2\,abcdge+a^2d^2ge\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorit
hm="giac")
```

```
[Out] 1/4*(2*B*b^2*i*e^2*log((b*x*e + a*e)/(d*x + c))^2 + 4*A*b^2*i*e^2*log((b*x*
e + a*e)/(d*x + c)) - 8*(b*x*e + a*e)*B*b*d*i*e*log((b*x*e + a*e)/(d*x + c)
)/(d*x + c) - 8*(b*x*e + a*e)*A*b*d*i*e/(d*x + c) + 8*(b*x*e + a*e)*B*b*d*i
*e/(d*x + c) + 2*(b*x*e + a*e)^2*B*d^2*i*log((b*x*e + a*e)/(d*x + c))/(d*x
+ c)^2 + 2*(b*x*e + a*e)^2*A*d^2*i/(d*x + c)^2 - (b*x*e + a*e)^2*B*d^2*i/(d
*x + c)^2)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c -
 a*d)))/(b^2*c^2*g*e - 2*a*b*c*d*g*e + a^2*d^2*g*e)
```

maple [B] time = 0.05, size = 1287, normalized size = 5.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)/(d*i*x+c*i)^3,x)
```

```
[Out] 3/2*d^2/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b
*c-3/2*d/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^
2*c^2-2*d/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a
*c-3/2/i^3/(a*d-b*c)^4/g*B*b^3/(d*x+c)*c^2+1/i^3/(a*d-b*c)^4/g*A*b^3*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/2/i^3/(a*d-b*c)^4/g*A/(d*x+c)^2*b^3*c^3-1/2*d
^3/i^3/(a*d-b*c)^4/g*A/(d*x+c)^2*a^3-3/2/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)*b^3*c-1/4/i^3/(a*d-b*c)^4/g*B/(d*x+c)^2*b^3*c^3+1/i^3/(a*
d-b*c)^4/g*A*b^3/(d*x+c)*c^2-7/4*d/i^3/(a*d-b*c)^4/g*B*b^2*a+7/4/i^3/(a*d-b
*c)^4/g*B*b^3*c+3/2*d/i^3/(a*d-b*c)^4/g*A*b^2*a-3/2/i^3/(a*d-b*c)^4/g*A*b^3
*c+1/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2+1/
2/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-d/i
^3/(a*d-b*c)^4/g*A*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+3/2*d/i^3/(a*d-b*c
)^4/g*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+1/2/i^3/(a*d-b*c)^4/g*B*b^3*l
```

```
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+1/4*d^3/i^3/(a*d-b*c)^4/g*B/(d*x+c)^2*a^
3-2*d/i^3/(a*d-b*c)^4/g*A*b^2/(d*x+c)*a*c-3/4*d^2/i^3/(a*d-b*c)^4/g*B/(d*x+
c)^2*a^2*b*c+3/4*d/i^3/(a*d-b*c)^4/g*B/(d*x+c)^2*a*b^2*c^2+3/2*d^2/i^3/(a*d
-b*c)^4/g*A/(d*x+c)^2*a^2*b*c-3/2*d/i^3/(a*d-b*c)^4/g*A/(d*x+c)^2*a*b^2*c^2
+3*d/i^3/(a*d-b*c)^4/g*B*b^2/(d*x+c)*a*c+d^2/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2-1/2*d/i^3/(a*d-b*c)^4/g*B*b^2*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)^2*a-1/2*d^3/i^3/(a*d-b*c)^4/g*B*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)/(d*x+c)^2*a^3+d^2/i^3/(a*d-b*c)^4/g*A*b/(d*x+c)*a^2-3/2*d^2/i^3
/(a*d-b*c)^4/g*B*b/(d*x+c)*a^2
```

maxima [B] time = 1.69, size = 885, normalized size = 3.64

$$\frac{1}{2}B\left(\frac{2\,bdx+3\,bc-ad}{\left(b^2c^2d^2-2\,abcd^3+a^2d^4\right)gi^3x^2+2\left(b^2c^3d-2\,abc^2d^2+a^2cd^3\right)gi^3x+\left(b^2c^4-2\,abc^3d+a^2c^2d^2\right)gi^3}+\frac{}{\left(b^3c^3-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algorit
hm="maxima")
```

```
[Out] 1/2*B*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*g*i^3
*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 - 2*a*b
*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d
 + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2
*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x +
c)) + 1/2*A*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)
*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 -
 2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2
*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3 - 3
*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3)) - 1/4*(7*b^2*c^2 - 8*a*b*c*
d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b
^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*
x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2
 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*
x + a))*log(d*x + c))*B/(b^3*c^5*g*i^3 - 3*a*b^2*c^4*d*g*i^3 + 3*a^2*b*c^3*
d^2*g*i^3 - a^3*c^2*d^3*g*i^3 + (b^3*c^3*d^2*g*i^3 - 3*a*b^2*c^2*d^3*g*i^3
+ 3*a^2*b*c*d^4*g*i^3 - a^3*d^5*g*i^3)*x^2 + 2*(b^3*c^4*d*g*i^3 - 3*a*b^2*c
^3*d^2*g*i^3 + 3*a^2*b*c^2*d^3*g*i^3 - a^3*c*d^4*g*i^3)*x)
```

mupad [B] time = 7.08, size = 545, normalized size = 2.24

$$\frac{3\,A\,b\,c}{2\,g\,i^3\,(a\,d-b\,c)^2\,(c+d\,x)^2}-\frac{A\,a\,d}{2\,g\,i^3\,(a\,d-b\,c)^2\,(c+d\,x)^2}-\frac{B\,b^2\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2}{2\,g\,i^3\,(a\,d-b\,c)^3}+\frac{B\,a\,d}{4\,g\,i^3\,(a\,d-b\,c)^2\,(c+d\,x)^2}-\frac{}{4\,g\,i^3\,(a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)*(c*i + d*i*x)^3),x)
```

```
[Out] (A*b^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g*i^3*(a*d - b*c
)^3) - (B*b^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*3i)/(g*i^3*(a*
d - b*c)^3) - (B*b^2*log((e*(a + b*x))/(c + d*x))^2)/(2*g*i^3*(a*d - b*c)^3
) - (A*a*d)/(2*g*i^3*(a*d - b*c)^2*(c + d*x)^2) + (3*A*b*c)/(2*g*i^3*(a*d -
 b*c)^2*(c + d*x)^2) + (B*a*d)/(4*g*i^3*(a*d - b*c)^2*(c + d*x)^2) - (7*B*b
*c)/(4*g*i^3*(a*d - b*c)^2*(c + d*x)^2) - (B*a^2*d^2*log((e*(a + b*x))/(c +
 d*x)))/(2*g*i^3*(a*d - b*c)^3*(c + d*x)^2) - (3*B*b^2*c^2*log((e*(a + b*x)
)/(c + d*x)))/(2*g*i^3*(a*d - b*c)^3*(c + d*x)^2) + (A*b*d*x)/(g*i^3*(a*d -
 b*c)^2*(c + d*x)^2) - (3*B*b*d*x)/(2*g*i^3*(a*d - b*c)^2*(c + d*x)^2) + (B
*a*b*d^2*x*log((e*(a + b*x))/(c + d*x)))/(g*i^3*(a*d - b*c)^3*(c + d*x)^2)
- (B*b^2*c*d*x*log((e*(a + b*x))/(c + d*x)))/(g*i^3*(a*d - b*c)^3*(c + d*x)
```

```
^2) + (2*B*a*b*c*d*log((e*(a + b*x))/(c + d*x)))/(g*i^3*(a*d - b*c)^3*(c +
d*x)^2)
```

sympy [B] time = 6.99, size = 889, normalized size = 3.66

$$-\frac{Bb^2\log\left(\frac{e(a+bx)}{c+dx}\right)^2}{2a^3d^3gi^3-6a^2bcd^2gi^3+6ab^2c^2dgi^3-2b^3c^3gi^3}+\frac{b^2(2A-3B)\log\left(x+\frac{2Aab^2d+2Ab^3c-3Bab^2d-3Bb^3c-\frac{a^4b^2d^4(2A-3B)}{(ad-bc)^3}+}{}\right.}{2gi^3(ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)/(d*i*x+c*i)**3,x)
```

```
[Out] -B*b**2*log(e*(a + b*x)/(c + d*x))**2/(2*a**3*d**3*g*i**3 - 6*a**2*b*c*d**2
*g*i**3 + 6*a*b**2*c**2*d*g*i**3 - 2*b**3*c**3*g*i**3) + b**2*(2*A - 3*B)*l
og(x + (2*A*a*b**2*d + 2*A*b**3*c - 3*B*a*b**2*d - 3*B*b**3*c - a**4*b**2*d
**4*(2*A - 3*B)/(a*d - b*c)**3 + 4*a**3*b**3*c*d**3*(2*A - 3*B)/(a*d - b*c)
**3 - 6*a**2*b**4*c**2*d**2*(2*A - 3*B)/(a*d - b*c)**3 + 4*a*b**5*c**3*d*(2
*A - 3*B)/(a*d - b*c)**3 - b**6*c**4*(2*A - 3*B)/(a*d - b*c)**3)/(4*A*b**3*
d - 6*B*b**3*d))/(2*g*i**3*(a*d - b*c)**3) - b**2*(2*A - 3*B)*log(x + (2*A*
a*b**2*d + 2*A*b**3*c - 3*B*a*b**2*d - 3*B*b**3*c + a**4*b**2*d**4*(2*A - 3
*B)/(a*d - b*c)**3 - 4*a**3*b**3*c*d**3*(2*A - 3*B)/(a*d - b*c)**3 + 6*a**2
*b**4*c**2*d**2*(2*A - 3*B)/(a*d - b*c)**3 - 4*a*b**5*c**3*d*(2*A - 3*B)/(a
*d - b*c)**3 + b**6*c**4*(2*A - 3*B)/(a*d - b*c)**3)/(4*A*b**3*d - 6*B*b**3
*d))/(2*g*i**3*(a*d - b*c)**3) + (-B*a*d + 3*B*b*c + 2*B*b*d*x)*log(e*(a +
b*x)/(c + d*x))/(2*a**2*c**2*d**2*g*i**3 + 4*a**2*c*d**3*g*i**3*x + 2*a**2*
d**4*g*i**3*x**2 - 4*a*b*c**3*d*g*i**3 - 8*a*b*c**2*d**2*g*i**3*x - 4*a*b*c
*d**3*g*i**3*x**2 + 2*b**2*c**4*g*i**3 + 4*b**2*c**3*d*g*i**3*x + 2*b**2*c*
*2*d**2*g*i**3*x**2) + (-2*A*a*d + 6*A*b*c + B*a*d - 7*B*b*c + x*(4*A*b*d -
 6*B*b*d))/(4*a**2*c**2*d**2*g*i**3 - 8*a*b*c**3*d*g*i**3 + 4*b**2*c**4*g*i
**3 + x**2*(4*a**2*d**4*g*i**3 - 8*a*b*c*d**3*g*i**3 + 4*b**2*c**2*d**2*g*i
**3) + x*(8*a**2*c*d**3*g*i**3 - 16*a*b*c**2*d**2*g*i**3 + 8*b**2*c**3*d*g*
i**3))
```

3.52 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^2(ci+dix)^3}\,dx$

Optimal. Leaf size=365

$$-\frac{b^3(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^3(a+bx)(bc-ad)^4}-\frac{3b^2d\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^3(bc-ad)^4}-\frac{d^3(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^2i^3(c+dx)^2(bc-ad)^4}+\frac{3bd}{}$$

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

Rubi [C] time = 1.11, antiderivative size = 631, normalized size of antiderivative = 1.73, number of steps used = 32, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{3b^2Bd\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^2i^3(bc-ad)^4}-\frac{3b^2Bd\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^2i^3(bc-ad)^4}-\frac{3b^2d\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^3(bc-ad)^4}-\frac{b^2\left(B\log\left(\frac{e(}{c}\right.\right.}{g^2i^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^2*(c*i + d*i*x)^3),
x]
```

```
[Out] -((b^2*B)/((b*c - a*d)^3*g^2*i^3*(a + b*x))) + (B*d)/(4*(b*c - a*d)^2*g^2*i
^3*(c + d*x)^2) + (5*b*B*d)/(2*(b*c - a*d)^3*g^2*i^3*(c + d*x)) + (3*b^2*B*
d*Log[a + b*x])/(2*(b*c - a*d)^4*g^2*i^3) + (3*b^2*B*d*Log[a + b*x]^2)/(2*(
b*c - a*d)^4*g^2*i^3) - (b^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c -
a*d)^3*g^2*i^3*(a + b*x)) - (d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*(b*
c - a*d)^2*g^2*i^3*(c + d*x)^2) - (2*b*d*(A + B*Log[(e*(a + b*x))/(c + d*x)
]))/((b*c - a*d)^3*g^2*i^3*(c + d*x)) - (3*b^2*d*Log[a + b*x]*(A + B*Log[(e
*(a + b*x))/(c + d*x)]))/((b*c - a*d)^4*g^2*i^3) - (3*b^2*B*d*Log[c + d*x])
/(2*(b*c - a*d)^4*g^2*i^3) - (3*b^2*B*d*Log[-((d*(a + b*x))/(b*c - a*d))]*L
og[c + d*x])/((b*c - a*d)^4*g^2*i^3) + (3*b^2*d*(A + B*Log[(e*(a + b*x))/(c
 + d*x)])*Log[c + d*x])/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B*d*Log[c + d*x]^2
)/(2*(b*c - a*d)^4*g^2*i^3) - (3*b^2*B*d*Log[a + b*x]*Log[(b*(c + d*x))/(b*
c - a*d)])/((b*c - a*d)^4*g^2*i^3) - (3*b^2*B*d*PolyLog[2, -((d*(a + b*x))/
(b*c - a*d))])/((b*c - a*d)^4*g^2*i^3) - (3*b^2*B*d*PolyLog[2, (b*(c + d*x)
)/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(52c+52dx)^3(ag+bgx)^2}\,dx = \int\left(\frac{b^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{140608(bc-ad)^3g^2(a+bx)^2} - \frac{3b^3d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{140608(bc-ad)^4g^2(a+bx)} + \frac{d^2\left(A+\right.}{140608(bc-}\right.$$

$$= -\frac{\left(3b^3d\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}dx}{140608(bc-ad)^4g^2} + \frac{\left(3b^2d^2\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}dx}{140608(bc-ad)^4g^2} + \frac{b^3\int\frac{A+B\log\left(\frac{e(a+bx}{c+dx}\right.}{(a+bx)^2}}{140608(bc-ad}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{140608(bc-ad)^3g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{281216(bc-ad)^2g^2(c+dx)^2} - \frac{bd\left(A+B\log\right.}{70304(bc-ad}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{140608(bc-ad)^3g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{281216(bc-ad)^2g^2(c+dx)^2} - \frac{bd\left(A+B\log\right.}{70304(bc-ad}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{140608(bc-ad)^3g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{281216(bc-ad)^2g^2(c+dx)^2} - \frac{bd\left(A+B\log\right.}{70304(bc-ad}$$

$$= -\frac{b^2B}{140608(bc-ad)^3g^2(a+bx)} + \frac{Bd}{562432(bc-ad)^2g^2(c+dx)^2} + \frac{5b}{281216(bc-a}$$

$$= -\frac{b^2B}{140608(bc-ad)^3g^2(a+bx)} + \frac{Bd}{562432(bc-ad)^2g^2(c+dx)^2} + \frac{5b}{281216(bc-a}$$

$$= -\frac{b^2B}{140608(bc-ad)^3g^2(a+bx)} + \frac{Bd}{562432(bc-ad)^2g^2(c+dx)^2} + \frac{5b}{281216(bc-a}$$

$$= -\frac{b^2B}{140608(bc-ad)^3g^2(a+bx)} + \frac{Bd}{562432(bc-ad)^2g^2(c+dx)^2} + \frac{5b}{281216(bc-a}$$

Mathematica [C] time = 0.75, size = 452, normalized size = 1.24

$$\frac{-12b^2d\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) - \frac{4b^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{a+bx} + 12b^2d\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) - \frac{8}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^2*(c*i + d*i*
x)^3),x]
```

```
[Out] ((-4*b^3*B*c)/(a + b*x) + (4*a*b^2*B*d)/(a + b*x) + (B*d*(b*c - a*d)^2)/(c
+ d*x)^2 + (8*b^2*B*c*d)/(c + d*x) - (8*a*b*B*d^2)/(c + d*x) + (2*b*B*d*(b*
c - a*d))/(c + d*x) + 6*b^2*B*d*Log[a + b*x] - (4*b^2*(b*c - a*d)*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]))/(a + b*x) - (2*d*(b*c - a*d)^2*(A + B*Log[(e*(
a + b*x))/(c + d*x)]))/(c + d*x)^2 - (8*b*d*(b*c - a*d)*(A + B*Log[(e*(a +
b*x))/(c + d*x)]))/(c + d*x) - 12*b^2*d*Log[a + b*x]*(A + B*Log[(e*(a + b*x
))/(c + d*x)]) - 6*b^2*B*d*Log[c + d*x] + 12*b^2*d*(A + B*Log[(e*(a + b*x))
/(c + d*x)])*Log[c + d*x] + 6*b^2*B*d*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(
b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) -
6*b^2*B*d*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x
] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(4*(b*c - a*d)^4*g^2*i^3)
```

fricas [A] time = 0.84, size = 672, normalized size = 1.84

$$-\frac{4\,(A+B)b^3c^3+3\,(2\,A-5\,B)ab^2c^2d-12\,(A-B)a^2bcd^2+(2\,A-B)a^3d^3+6\left((2\,A-B)b^3cd^2-(2\,A-B)ab^2d^3\right.}{4\left(\left(b^5c^4d^2-4\,ab^4c^3d^3+6\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, algor
ithm="fricas")
```

```
[Out] -1/4*(4*(A + B)*b^3*c^3 + 3*(2*A - 5*B)*a*b^2*c^2*d - 12*(A - B)*a^2*b*c*d^
2 + (2*A - B)*a^3*d^3 + 6*((2*A - B)*b^3*c*d^2 - (2*A - B)*a*b^2*d^3)*x^2 +
 6*(B*b^3*d^3*x^3 + B*a*b^2*c^2*d + (2*B*b^3*c*d^2 + B*a*b^2*d^3)*x^2 + (B*
b^3*c^2*d + 2*B*a*b^2*c*d^2)*x)*log((b*e*x + a*e)/(d*x + c))^2 + 3*((6*A -
B)*b^3*c^2*d - 2*(2*A + B)*a*b^2*c*d^2 - (2*A - 3*B)*a^2*b*d^3)*x + 2*(3*(2
*A - B)*b^3*d^3*x^3 + 2*B*b^3*c^3 + 6*A*a*b^2*c^2*d - 6*B*a^2*b*c*d^2 + B*a
^3*d^3 + 3*(4*A*b^3*c*d^2 + (2*A - 3*B)*a*b^2*d^3)*x^2 + 3*(2*(A + B)*b^3*c
^2*d + 4*(A - B)*a*b^2*c*d^2 - B*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c))
)/((b^5*c^4*d^2 - 4*a*b^4*c^3*d^3 + 6*a^2*b^3*c^2*d^4 - 4*a^3*b^2*c*d^5 + a
^4*b*d^6)*g^2*i^3*x^3 + (2*b^5*c^5*d - 7*a*b^4*c^4*d^2 + 8*a^2*b^3*c^3*d^3
- 2*a^3*b^2*c^2*d^4 - 2*a^4*b*c*d^5 + a^5*d^6)*g^2*i^3*x^2 + (b^5*c^6 - 2*a
*b^4*c^5*d - 2*a^2*b^3*c^4*d^2 + 8*a^3*b^2*c^3*d^3 - 7*a^4*b*c^2*d^4 + 2*a^
5*c*d^5)*g^2*i^3*x + (a*b^4*c^6 - 4*a^2*b^3*c^5*d + 6*a^3*b^2*c^4*d^2 - 4*a
^4*b*c^3*d^3 + a^5*c^2*d^4)*g^2*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 1729, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x)
```

```
[Out] -1/2*d^4/i^3/(a*d-b*c)^5/g^2*A/(d*x+c)^2*a^3+1/4*d^4/i^3/(a*d-b*c)^5/g^2*B/
(d*x+c)^2*a^3+e/i^3/(a*d-b*c)^5/g^2*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d*e/i^3/(a*d-b*c)^5/g^2*B*b^3/(1/(
d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+3/2*d^3/i^3/(a*d-b*c)^5/g^2*A/(d*x+c)
^2*a^2*b*c-3/2*d^2/i^3/(a*d-b*c)^5/g^2*A/(d*x+c)^2*a*b^2*c^2-3/4*d^3/i^3/(a
*d-b*c)^5/g^2*B/(d*x+c)^2*a^2*b*c+3/4*d^2/i^3/(a*d-b*c)^5/g^2*B/(d*x+c)^2*a
*b^2*c^2-4*d^2/i^3/(a*d-b*c)^5/g^2*A*b^2/(d*x+c)*c*a+3/2*d^3/i^3/(a*d-b*c)^
5/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c-3/2*d^2/i^3/(a*d-
b*c)^5/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2-4*d^2/i^3/
(a*d-b*c)^5/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c-d*e/i^3/(
a*d-b*c)^5/g^2*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)*a-5/2*d^3/i^3/(a*d-b*c)^5/g^2*B*b/(d*x+c)*a^2-1/2*d^4/i^3
/(a*d-b*c)^5/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+e/i^3/(a*d
-b*c)^5/g^2*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-1/4*d/i^3/(a*d-
b*c)^5/g^2*B/(d*x+c)^2*b^3*c^3+2*d/i^3/(a*d-b*c)^5/g^2*B*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)*b^3/(d*x+c)*c^2-d*e/i^3/(a*d-b*c)^5/g^2*A*b^3/(1/(d*x+c)*a*e-
```

```
1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d^3/i^3/(a*d-b*c)^5/g^2*B*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*b/(d*x+c)*a^2+2*d/i^3/(a*d-b*c)^5/g^2*A*b^3/(d*x+c)*c^2+2*d^3/i
^3/(a*d-b*c)^5/g^2*A*b/(d*x+c)*a^2+e/i^3/(a*d-b*c)^5/g^2*B*b^4/(1/(d*x+c)*a
*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+5/2*d^2/i^3/(a*d-b*c)^5/g^2*A*b^2*a-5/2*d/i^3
/(a*d-b*c)^5/g^2*A*b^3*c-11/4*d^2/i^3/(a*d-b*c)^5/g^2*B*b^2*a+11/4*d/i^3/(a
*d-b*c)^5/g^2*B*b^3*c+5*d^2/i^3/(a*d-b*c)^5/g^2*B*b^2/(d*x+c)*a*c+1/2*d/i^3
/(a*d-b*c)^5/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3+1/2*d/
i^3/(a*d-b*c)^5/g^2*A/(d*x+c)^2*b^3*c^3-5/2*d/i^3/(a*d-b*c)^5/g^2*B*b^3/(d*
x+c)*c^2+3*d/i^3/(a*d-b*c)^5/g^2*A*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-3*
d^2/i^3/(a*d-b*c)^5/g^2*A*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-3/2*d^2/i^3
/(a*d-b*c)^5/g^2*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+5/2*d^2/i^3/(a*d
-b*c)^5/g^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a-5/2*d/i^3/(a*d-b*c)^5/g
^2*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c+3/2*d/i^3/(a*d-b*c)^5/g^2*B*b^3*
ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c
```

maxima [B] time = 2.59, size = 1721, normalized size = 4.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, algor
ithm="maxima")
```

```
[Out] -1/2*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a
*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g
^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d
^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*
a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a
^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4*a
*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*
d*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^
3 + a^4*d^4)*g^2*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 1/2*A*((6*b^2
*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b
^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g^2*i^3*x^3 + (
2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)*
g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3
- 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2 -
 a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6
*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*d*log(d*x + c)
/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g
^2*i^3)) - 1/4*(4*b^3*c^3 - 15*a*b^2*c^2*d + 12*a^2*b*c*d^2 - a^3*d^3 - 6*(
b^3*c*d^2 - a*b^2*d^3)*x^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 +
a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a)^2 - 6*(b^3*d^3
*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c
*d^2)*x)*log(d*x + c)^2 - 3*(b^3*c^2*d + 2*a*b^2*c*d^2 - 3*a^2*b*d^3)*x - 6
*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d +
2*a*b^2*c*d^2)*x)*log(b*x + a) + 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^
2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x + 2*(b^3*d^3*x^3 + a*b^2
*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log
(b*x + a))*log(d*x + c))*B/(a*b^4*c^6*g^2*i^3 - 4*a^2*b^3*c^5*d*g^2*i^3 + 6
*a^3*b^2*c^4*d^2*g^2*i^3 - 4*a^4*b*c^3*d^3*g^2*i^3 + a^5*c^2*d^4*g^2*i^3 +
(b^5*c^4*d^2*g^2*i^3 - 4*a*b^4*c^3*d^3*g^2*i^3 + 6*a^2*b^3*c^2*d^4*g^2*i^3
- 4*a^3*b^2*c*d^5*g^2*i^3 + a^4*b*d^6*g^2*i^3)*x^3 + (2*b^5*c^5*d*g^2*i^3 -
 7*a*b^4*c^4*d^2*g^2*i^3 + 8*a^2*b^3*c^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*d^4*g^
2*i^3 - 2*a^4*b*c*d^5*g^2*i^3 + a^5*d^6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i^3 - 2
*a*b^4*c^5*d*g^2*i^3 - 2*a^2*b^3*c^4*d^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*g^2*i^
3 - 7*a^4*b*c^2*d^4*g^2*i^3 + 2*a^5*c*d^5*g^2*i^3)*x)
```

mupad [B] time = 9.29, size = 983, normalized size = 2.69

$$\frac{A\,b^2\,c^2}{g^2\,i^3\,{\left(a\,d-b\,c\right)}^3\,\left(a+b\,x\right)\,{\left(c+d\,x\right)}^2}-\frac{A\,a^2\,d^2}{2\,g^2\,i^3\,{\left(a\,d-b\,c\right)}^3\,\left(a+b\,x\right)\,{\left(c+d\,x\right)}^2}-\frac{3\,B\,b^2\,d\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2}{2\,g^2\,i^3\,{\left(a\,d-b\,c\right)}^4}+\frac{}{4\,g^2\,i^3\,(a\,d-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^2*(c*i + d*i*x)^3),
x)
```

```
[Out] (A*b^2*d*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*6i)/(g^2*i^3*(a*d -
 b*c)^4) - (3*B*b^2*d*log((e*(a + b*x))/(c + d*x))^2)/(2*g^2*i^3*(a*d - b*c
)^4) - (B*b^2*d*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*3i)/(g^2*i^3
*(a*d - b*c)^4) - (A*a^2*d^2)/(2*g^2*i^3*(a*d - b*c)^3*(a + b*x)*(c + d*x)^
2) + (A*b^2*c^2)/(g^2*i^3*(a*d - b*c)^3*(a + b*x)*(c + d*x)^2) + (B*a^2*d^2
)/(4*g^2*i^3*(a*d - b*c)^3*(a + b*x)*(c + d*x)^2) + (B*b^2*c^2)/(g^2*i^3*(a
*d - b*c)^3*(a + b*x)*(c + d*x)^2) - (B*a*d*log((e*(a + b*x))/(c + d*x)))/(
2*g^2*i^3*(a*d - b*c)^2*(a + b*x)*(c + d*x)^2) - (B*b*c*log((e*(a + b*x))/(
c + d*x)))/(g^2*i^3*(a*d - b*c)^2*(a + b*x)*(c + d*x)^2) + (3*A*b^2*d^2*x^2
)/(g^2*i^3*(a*d - b*c)^3*(a + b*x)*(c + d*x)^2) - (3*B*b^2*d^2*x^2)/(2*g^2*
i^3*(a*d - b*c)^3*(a + b*x)*(c + d*x)^2) + (5*A*a*b*c*d)/(2*g^2*i^3*(a*d -
b*c)^3*(a + b*x)*(c + d*x)^2) - (11*B*a*b*c*d)/(4*g^2*i^3*(a*d - b*c)^3*(a
+ b*x)*(c + d*x)^2) - (3*B*b*d*x*log((e*(a + b*x))/(c + d*x)))/(2*g^2*i^3*(
a*d - b*c)^2*(a + b*x)*(c + d*x)^2) + (3*B*b^2*d^2*x^2*log((e*(a + b*x))/(c
 + d*x)))/(g^2*i^3*(a*d - b*c)^3*(a + b*x)*(c + d*x)^2) + (3*A*a*b*d^2*x)/(
2*g^2*i^3*(a*d - b*c)^3*(a + b*x)*(c + d*x)^2) - (9*B*a*b*d^2*x)/(4*g^2*i^3
*(a*d - b*c)^3*(a + b*x)*(c + d*x)^2) + (9*A*b^2*c*d*x)/(2*g^2*i^3*(a*d - b
*c)^3*(a + b*x)*(c + d*x)^2) - (3*B*b^2*c*d*x)/(4*g^2*i^3*(a*d - b*c)^3*(a
+ b*x)*(c + d*x)^2) + (3*B*a*b*c*d*log((e*(a + b*x))/(c + d*x)))/(g^2*i^3*(
a*d - b*c)^3*(a + b*x)*(c + d*x)^2) + (3*B*a*b*d^2*x*log((e*(a + b*x))/(c +
 d*x)))/(g^2*i^3*(a*d - b*c)^3*(a + b*x)*(c + d*x)^2) + (3*B*b^2*c*d*x*log(
(e*(a + b*x))/(c + d*x)))/(g^2*i^3*(a*d - b*c)^3*(a + b*x)*(c + d*x)^2)
```

sympy [B] time = 50.56, size = 1562, normalized size = 4.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**2/(d*i*x+c*i)**3,x)
```

```
[Out] -3*B*b**2*d*log(e*(a + b*x)/(c + d*x))**2/(2*a**4*d**4*g**2*i**3 - 8*a**3*b
*c*d**3*g**2*i**3 + 12*a**2*b**2*c**2*d**2*g**2*i**3 - 8*a*b**3*c**3*d*g**2
*i**3 + 2*b**4*c**4*g**2*i**3) + 3*b**2*d*(2*A - B)*log(x + (6*A*a*b**2*d**
2 + 6*A*b**3*c*d - 3*B*a*b**2*d**2 - 3*B*b**3*c*d - 3*a**5*b**2*d**6*(2*A -
 B)/(a*d - b*c)**4 + 15*a**4*b**3*c*d**5*(2*A - B)/(a*d - b*c)**4 - 30*a**3
*b**4*c**2*d**4*(2*A - B)/(a*d - b*c)**4 + 30*a**2*b**5*c**3*d**3*(2*A - B)
/(a*d - b*c)**4 - 15*a*b**6*c**4*d**2*(2*A - B)/(a*d - b*c)**4 + 3*b**7*c**
5*d*(2*A - B)/(a*d - b*c)**4)/(12*A*b**3*d**2 - 6*B*b**3*d**2))/(2*g**2*i**
3*(a*d - b*c)**4) - 3*b**2*d*(2*A - B)*log(x + (6*A*a*b**2*d**2 + 6*A*b**3*
c*d - 3*B*a*b**2*d**2 - 3*B*b**3*c*d + 3*a**5*b**2*d**6*(2*A - B)/(a*d - b*
c)**4 - 15*a**4*b**3*c*d**5*(2*A - B)/(a*d - b*c)**4 + 30*a**3*b**4*c**2*d*
*4*(2*A - B)/(a*d - b*c)**4 - 30*a**2*b**5*c**3*d**3*(2*A - B)/(a*d - b*c)*
*4 + 15*a*b**6*c**4*d**2*(2*A - B)/(a*d - b*c)**4 - 3*b**7*c**5*d*(2*A - B)
/(a*d - b*c)**4)/(12*A*b**3*d**2 - 6*B*b**3*d**2))/(2*g**2*i**3*(a*d - b*c)
**4) + (-B*a**2*d**2 + 5*B*a*b*c*d + 3*B*a*b*d**2*x + 2*B*b**2*c**2 + 9*B*b
**2*c*d*x + 6*B*b**2*d**2*x**2)*log(e*(a + b*x)/(c + d*x))/(2*a**4*c**2*d**
3*g**2*i**3 + 4*a**4*c*d**4*g**2*i**3*x + 2*a**4*d**5*g**2*i**3*x**2 - 6*a*
*3*b*c**3*d**2*g**2*i**3 - 10*a**3*b*c**2*d**3*g**2*i**3*x - 2*a**3*b*c*d**
4*g**2*i**3*x**2 + 2*a**3*b*d**5*g**2*i**3*x**3 + 6*a**2*b**2*c**4*d*g**2*i
```

```
**3 + 6*a**2*b**2*c**3*d**2*g**2*i**3*x - 6*a**2*b**2*c**2*d**3*g**2*i**3*x
**2 - 6*a**2*b**2*c*d**4*g**2*i**3*x**3 - 2*a*b**3*c**5*g**2*i**3 + 2*a*b**
3*c**4*d*g**2*i**3*x + 10*a*b**3*c**3*d**2*g**2*i**3*x**2 + 6*a*b**3*c**2*d
**3*g**2*i**3*x**3 - 2*b**4*c**5*g**2*i**3*x - 4*b**4*c**4*d*g**2*i**3*x**2
 - 2*b**4*c**3*d**2*g**2*i**3*x**3) + (-2*A*a**2*d**2 + 10*A*a*b*c*d + 4*A*
b**2*c**2 + B*a**2*d**2 - 11*B*a*b*c*d + 4*B*b**2*c**2 + x**2*(12*A*b**2*d*
*2 - 6*B*b**2*d**2) + x*(6*A*a*b*d**2 + 18*A*b**2*c*d - 9*B*a*b*d**2 - 3*B*
b**2*c*d))/(4*a**4*c**2*d**3*g**2*i**3 - 12*a**3*b*c**3*d**2*g**2*i**3 + 12
*a**2*b**2*c**4*d*g**2*i**3 - 4*a*b**3*c**5*g**2*i**3 + x**3*(4*a**3*b*d**5
*g**2*i**3 - 12*a**2*b**2*c*d**4*g**2*i**3 + 12*a*b**3*c**2*d**3*g**2*i**3
- 4*b**4*c**3*d**2*g**2*i**3) + x**2*(4*a**4*d**5*g**2*i**3 - 4*a**3*b*c*d*
*4*g**2*i**3 - 12*a**2*b**2*c**2*d**3*g**2*i**3 + 20*a*b**3*c**3*d**2*g**2*
i**3 - 8*b**4*c**4*d*g**2*i**3) + x*(8*a**4*c*d**4*g**2*i**3 - 20*a**3*b*c*
*2*d**3*g**2*i**3 + 12*a**2*b**2*c**3*d**2*g**2*i**3 + 4*a*b**3*c**4*d*g**2
*i**3 - 4*b**4*c**5*g**2*i**3))
```

3.53 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^3(ci+dix)^3}\,dx$

Optimal. Leaf size=463

$$-\frac{b^4(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^3i^3(a+bx)^2(bc-ad)^5}+\frac{4b^3d(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^3i^3(a+bx)(bc-ad)^5}+\frac{6b^2d^2\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^3i^3(bc-ad)^5}$$

```
[Out] -1/4*B*d^4*(b*x+a)^2/(-a*d+b*c)^5/g^3/i^3/(d*x+c)^2+4*b*B*d^3*(b*x+a)/(-a*d
+b*c)^5/g^3/i^3/(d*x+c)+4*b^3*B*d*(d*x+c)/(-a*d+b*c)^5/g^3/i^3/(b*x+a)-1/4*
b^4*B*(d*x+c)^2/(-a*d+b*c)^5/g^3/i^3/(b*x+a)^2-3*b^2*B*d^2*ln((b*x+a)/(d*x+
c))^2/(-a*d+b*c)^5/g^3/i^3+1/2*d^4*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-
a*d+b*c)^5/g^3/i^3/(d*x+c)^2-4*b*d^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-
a*d+b*c)^5/g^3/i^3/(d*x+c)+4*b^3*d*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*
d+b*c)^5/g^3/i^3/(b*x+a)-1/2*b^4*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*
d+b*c)^5/g^3/i^3/(b*x+a)^2+6*b^2*d^2*ln((b*x+a)/(d*x+c))*(A+B*ln(e*(b*x+a)/
(d*x+c)))/(-a*d+b*c)^5/g^3/i^3
```

Rubi [C] time = 1.41, antiderivative size = 673, normalized size of antiderivative = 1.45, number of steps used = 36, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{6b^2Bd^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^3i^3(bc-ad)^5}+\frac{6b^2Bd^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^3i^3(bc-ad)^5}+\frac{6b^2d^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^3i^3(bc-ad)^5}-\frac{6b^2d^2\,\mathrm{lc}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^3*(c*i + d*i*x)^3),
x]
```

```
[Out] -(b^2*B)/(4*(b*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (7*b^2*B*d)/(2*(b*c - a*d)
^4*g^3*i^3*(a + b*x)) - (B*d^2)/(4*(b*c - a*d)^3*g^3*i^3*(c + d*x)^2) - (7*
b*B*d^2)/(2*(b*c - a*d)^4*g^3*i^3*(c + d*x)) - (3*b^2*B*d^2*Log[a + b*x]^2)
/((b*c - a*d)^5*g^3*i^3) - (b^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*(b
*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (3*b^2*d*(A + B*Log[(e*(a + b*x))/(c + d
*x)]))/((b*c - a*d)^4*g^3*i^3*(a + b*x)) + (d^2*(A + B*Log[(e*(a + b*x))/(c
 + d*x)]))/(2*(b*c - a*d)^3*g^3*i^3*(c + d*x)^2) + (3*b*d^2*(A + B*Log[(e*(
a + b*x))/(c + d*x)]))/((b*c - a*d)^4*g^3*i^3*(c + d*x)) + (6*b^2*d^2*Log[a
 + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^5*g^3*i^3) + (6*
b^2*B*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^5*g^
3*i^3) - (6*b^2*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*
c - a*d)^5*g^3*i^3) - (3*b^2*B*d^2*Log[c + d*x]^2)/((b*c - a*d)^5*g^3*i^3)
+ (6*b^2*B*d^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*
g^3*i^3) + (6*b^2*B*d^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a
*d)^5*g^3*i^3) + (6*b^2*B*d^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c
- a*d)^5*g^3*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
```

```
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(53c+53dx)^3(ag+bgx)^3}\,dx = \int\left(\frac{b^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{148877(bc-ad)^3g^3(a+bx)^3} - \frac{3b^3d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{148877(bc-ad)^4g^3(a+bx)^2} + \frac{6b^3d^2\left(\right.}{148877}\right.$$

$$= \frac{\left(6b^3d^2\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}\,dx}{148877(bc-ad)^5g^3} - \frac{\left(6b^2d^3\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}\,dx}{148877(bc-ad)^5g^3} - \frac{\left(3b^3d\right)\int\frac{A+B\log}{(a}}{148877(bc}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{297754(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{148877(bc-ad)^4g^3(a+bx)} + \frac{d^2\left(A+\right.}{297754(bc}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{297754(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{148877(bc-ad)^4g^3(a+bx)} + \frac{d^2\left(A+\right.}{297754(bc}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{297754(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{148877(bc-ad)^4g^3(a+bx)} + \frac{d^2\left(A+\right.}{297754(bc}$$

$$= -\frac{b^2B}{595508(bc-ad)^3g^3(a+bx)^2} + \frac{7b^2Bd}{297754(bc-ad)^4g^3(a+bx)} - \frac{}{595508(bc}$$

$$= -\frac{b^2B}{595508(bc-ad)^3g^3(a+bx)^2} + \frac{7b^2Bd}{297754(bc-ad)^4g^3(a+bx)} - \frac{}{595508(bc}$$

$$= -\frac{b^2B}{595508(bc-ad)^3g^3(a+bx)^2} + \frac{7b^2Bd}{297754(bc-ad)^4g^3(a+bx)} - \frac{}{595508(bc}$$

$$= -\frac{b^2B}{595508(bc-ad)^3g^3(a+bx)^2} + \frac{7b^2Bd}{297754(bc-ad)^4g^3(a+bx)} - \frac{}{595508(bc}$$

Mathematica [C] time = 1.18, size = 533, normalized size = 1.15

$$-\frac{-24b^2d^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+24b^2d^2\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-\frac{12b^2d(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{a+bx}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^3*(c*i + d*i*
x)^3),x]
```

```
[Out] -1/4*((b^2*B*(b*c - a*d)^2)/(a + b*x)^2 - (12*b^3*B*c*d)/(a + b*x) + (12*a*
b^2*B*d^2)/(a + b*x) - (2*b^2*B*d*(b*c - a*d))/(a + b*x) + (B*d^2*(b*c - a*
d)^2)/(c + d*x)^2 + (12*b^2*B*c*d^2)/(c + d*x) - (12*a*b*B*d^3)/(c + d*x) +
 (2*b*B*d^2*(b*c - a*d))/(c + d*x) + (2*b^2*(b*c - a*d)^2*(A + B*Log[(e*(a
+ b*x))/(c + d*x)]))/(a + b*x)^2 - (12*b^2*d*(b*c - a*d)*(A + B*Log[(e*(a +
 b*x))/(c + d*x)]))/(a + b*x) - (2*d^2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(c + d*x)^2 - (12*b*d^2*(b*c - a*d)*(A + B*Log[(e*(a + b*x)
```

```
)/(c + d*x)]))/(c + d*x) - 24*b^2*d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))
/(c + d*x)]) + 24*b^2*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x]
 + 12*b^2*B*d^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*
d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 12*b^2*B*d^2*((2*Log[(
d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b
*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^5*g^3*i^3)
```

fricas [B] time = 1.06, size = 1011, normalized size = 2.18

$$-\frac{(2A+B)b^4c^4 - 16(A+B)ab^3c^3d + 30Ba^2b^2c^2d^2 + 16(A-B)a^3bcd^3 - (2A-B)a^4d^4 - 24\left(Ab^4cd^3 - Aab^3d^4\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, algor
ithm="fricas")
```

```
[Out] -1/4*((2*A + B)*b^4*c^4 - 16*(A + B)*a*b^3*c^3*d + 30*B*a^2*b^2*c^2*d^2 + 1
6*(A - B)*a^3*b*c*d^3 - (2*A - B)*a^4*d^4 - 24*(A*b^4*c*d^3 - A*a*b^3*d^4)*
x^3 - 12*((3*A + B)*b^4*c^2*d^2 - 2*B*a*b^3*c*d^3 - (3*A - B)*a^2*b^2*d^4)*
x^2 - 12*(B*b^4*d^4*x^4 + B*a^2*b^2*c^2*d^2 + 2*(B*b^4*c*d^3 + B*a*b^3*d^4)
*x^3 + (B*b^4*c^2*d^2 + 4*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*x^2 + 2*(B*a*b^3*c
^2*d^2 + B*a^2*b^2*c*d^3)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 4*((2*A + 3*B
)*b^4*c^3*d + 3*(4*A - B)*a*b^3*c^2*d^2 - 3*(4*A + B)*a^2*b^2*c*d^3 - (2*A
- 3*B)*a^3*b*d^4)*x - 2*(12*A*b^4*d^4*x^4 - B*b^4*c^4 + 8*B*a*b^3*c^3*d + 1
2*A*a^2*b^2*c^2*d^2 - 8*B*a^3*b*c*d^3 + B*a^4*d^4 + 12*((2*A + B)*b^4*c*d^3
 + (2*A - B)*a*b^3*d^4)*x^3 + 6*((2*A + 3*B)*b^4*c^2*d^2 + 8*A*a*b^3*c*d^3
+ (2*A - 3*B)*a^2*b^2*d^4)*x^2 + 4*(B*b^4*c^3*d + 6*(A + B)*a*b^3*c^2*d^2 +
 6*(A - B)*a^2*b^2*c*d^3 - B*a^3*b*d^4)*x)*log((b*e*x + a*e)/(d*x + c)))/((
b^7*c^5*d^2 - 5*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 - 10*a^3*b^4*c^2*d^5 + 5
*a^4*b^3*c*d^6 - a^5*b^2*d^7)*g^3*i^3*x^4 + 2*(b^7*c^6*d - 4*a*b^6*c^5*d^2
+ 5*a^2*b^5*c^4*d^3 - 5*a^4*b^3*c^2*d^5 + 4*a^5*b^2*c*d^6 - a^6*b*d^7)*g^3*
i^3*x^3 + (b^7*c^7 - a*b^6*c^6*d - 9*a^2*b^5*c^5*d^2 + 25*a^3*b^4*c^4*d^3 -
 25*a^4*b^3*c^3*d^4 + 9*a^5*b^2*c^2*d^5 + a^6*b*c*d^6 - a^7*d^7)*g^3*i^3*x^
2 + 2*(a*b^6*c^7 - 4*a^2*b^5*c^6*d + 5*a^3*b^4*c^5*d^2 - 5*a^5*b^2*c^3*d^4
+ 4*a^6*b*c^2*d^5 - a^7*c*d^6)*g^3*i^3*x + (a^2*b^5*c^7 - 5*a^3*b^4*c^6*d +
 10*a^4*b^3*c^5*d^2 - 10*a^5*b^2*c^4*d^3 + 5*a^6*b*c^3*d^4 - a^7*c^2*d^5)*g
^3*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.05, size = 2182, normalized size = 4.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)
```

```
[Out] -1/2*d^5/i^3/(a*d-b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^
3-6*d^3/i^3/(a*d-b*c)^6/g^3*A*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+6*d^2/i
^3/(a*d-b*c)^6/g^3*A*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-7/2*d^4/i^3/(a*d
```

```
-b*c)^6/g^3*B*b/(d*x+c)*a^2+7*d^3/i^3/(a*d-b*c)^6/g^3*B*b^2/(d*x+c)*a*c-7/2
*d^2/i^3/(a*d-b*c)^6/g^3*B*b^3/(d*x+c)*c^2-1/4*e^2/i^3/(a*d-b*c)^6/g^3*B*b^
5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-3/2*d^3/i^3/(a*d-b*c)^6/g^3*A
/(d*x+c)^2*a*b^2*c^2+3/4*d^3/i^3/(a*d-b*c)^6/g^3*B/(d*x+c)^2*a*b^2*c^2-3*d^
3/i^3/(a*d-b*c)^6/g^3*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/2*d*e^2/i
^3/(a*d-b*c)^6/g^3*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-4*d^2*
e/i^3/(a*d-b*c)^6/g^3*A*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-1/2*d
^5/i^3/(a*d-b*c)^6/g^3*A/(d*x+c)^2*a^3+1/4*d^5/i^3/(a*d-b*c)^6/g^3*B/(d*x+c
)^2*a^3-4*d^2*e/i^3/(a*d-b*c)^6/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)*a-6*d^3/i^3/(a*d-b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d
*x+c)*a*c+3/2*d^4/i^3/(a*d-b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*
x+c)^2*a^2*b*c-3/2*d^3/i^3/(a*d-b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)/(d*x+c)^2*a*b^2*c^2+1/2*d*e^2/i^3/(a*d-b*c)^6/g^3*B*b^4/(1/(d*x+c)*a*e-1/
(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-4*d^2*e/i^3/(a*d
-b*c)^6/g^3*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)*a+4*d*e/i^3/(a*d-b*c)^6/g^3*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b
*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-6*d^3/i^3/(a*d-b*c)^6/g^3*A
*b^2/(d*x+c)*c*a+1/4*d*e^2/i^3/(a*d-b*c)^6/g^3*B*b^4/(1/(d*x+c)*a*e-1/(d*x+
c)*b*c/d*e+b/d*e)^2*a+4*d*e/i^3/(a*d-b*c)^6/g^3*B*b^4/(1/(d*x+c)*a*e-1/(d*x
+c)*b*c/d*e+b/d*e)*c+3*d^4/i^3/(a*d-b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)*b/(d*x+c)*a^2+7/2*d^3/i^3/(a*d-b*c)^6/g^3*A*b^2*a-7/2*d^2/i^3/(a*d-b*
c)^6/g^3*A*b^3*c-15/4*d^3/i^3/(a*d-b*c)^6/g^3*B*b^2*a+15/4*d^2/i^3/(a*d-b*c
)^6/g^3*B*b^3*c-1/2*e^2/i^3/(a*d-b*c)^6/g^3*A*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*
b*c/d*e+b/d*e)^2*c-1/4*d^2/i^3/(a*d-b*c)^6/g^3*B/(d*x+c)^2*b^3*c^3+3*d^2/i^
3/(a*d-b*c)^6/g^3*A*b^3/(d*x+c)*c^2+1/2*d^2/i^3/(a*d-b*c)^6/g^3*A/(d*x+c)^2
*b^3*c^3+3*d^4/i^3/(a*d-b*c)^6/g^3*A*b/(d*x+c)*a^2+3*d^2/i^3/(a*d-b*c)^6/g^
3*B*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+7/2*d^3/i^3/(a*d-b*c)^6/g^3*B*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+3/2*d^4/i^3/(a*d-b*c)^6/g^3*A/(d*x+c)^
2*a^2*b*c-3/4*d^4/i^3/(a*d-b*c)^6/g^3*B/(d*x+c)^2*a^2*b*c+1/2*d^2/i^3/(a*d-
b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3+4*d*e/i^3/(a
*d-b*c)^6/g^3*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-7/2*d^2/i^3/(
a*d-b*c)^6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c+3*d^2/i^3/(a*d-b*c)^
6/g^3*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2-1/2*e^2/i^3/(a*d-b*
c)^6/g^3*B*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)*c
```

maxima [B] time = 2.79, size = 2380, normalized size = 5.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, algor
ithm="maxima")
```

```
[Out] 1/2*B*((12*b^3*d^3*x^3 - b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^3
+ 18*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d^3
)*x)/((b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^5
+ a^4*b^2*d^6)*g^3*i^3*x^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c^3
*d^3 + 2*a^3*b^3*c^2*d^4 - 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^6*
c^6 - 9*a^2*b^4*c^4*d^2 + 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^6)
*g^3*i^3*x^2 + 2*(a*b^5*c^6 - 3*a^2*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4*b
^2*c^3*d^3 - 3*a^5*b*c^2*d^4 + a^6*c*d^5)*g^3*i^3*x + (a^2*b^4*c^6 - 4*a^3*
b^3*c^5*d + 6*a^4*b^2*c^4*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d^4)*g^3*i^3) + 1
2*b^2*d^2*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*
a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3) - 12*b^2*d^2*log(d*x +
c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*
a^4*b*c*d^4 - a^5*d^5)*g^3*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 1/2
*A*((12*b^3*d^3*x^3 - b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^3 + 1
8*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d^3)*x
)/((b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^5 + a
```

```
^4*b^2*d^6)*g^3*i^3*x^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c^3*d^
3 + 2*a^3*b^3*c^2*d^4 - 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^6*c^6
 - 9*a^2*b^4*c^4*d^2 + 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^6)*g^
3*i^3*x^2 + 2*(a*b^5*c^6 - 3*a^2*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4*b^2*
c^3*d^3 - 3*a^5*b*c^2*d^4 + a^6*c*d^5)*g^3*i^3*x + (a^2*b^4*c^6 - 4*a^3*b^3
*c^5*d + 6*a^4*b^2*c^4*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d^4)*g^3*i^3) + 12*b
^2*d^2*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3
*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3) - 12*b^2*d^2*log(d*x + c)/
((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4
*b*c*d^4 - a^5*d^5)*g^3*i^3)) - 1/4*(b^4*c^4 - 16*a*b^3*c^3*d + 30*a^2*b^2*
c^2*d^2 - 16*a^3*b*c*d^3 + a^4*d^4 - 12*(b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*
b^2*d^4)*x^2 + 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4
)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2
+ a^2*b^2*c*d^3)*x)*log(b*x + a)^2 - 24*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*
(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x
^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)*log(d*x + c) + 12*(b
^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2
 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*
log(d*x + c)^2 - 12*(b^4*c^3*d - a*b^3*c^2*d^2 - a^2*b^2*c*d^3 + a^3*b*d^4)
*x)*B/(a^2*b^5*c^7*g^3*i^3 - 5*a^3*b^4*c^6*d*g^3*i^3 + 10*a^4*b^3*c^5*d^2*g
^3*i^3 - 10*a^5*b^2*c^4*d^3*g^3*i^3 + 5*a^6*b*c^3*d^4*g^3*i^3 - a^7*c^2*d^5
*g^3*i^3 + (b^7*c^5*d^2*g^3*i^3 - 5*a*b^6*c^4*d^3*g^3*i^3 + 10*a^2*b^5*c^3*
d^4*g^3*i^3 - 10*a^3*b^4*c^2*d^5*g^3*i^3 + 5*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^
2*d^7*g^3*i^3)*x^4 + 2*(b^7*c^6*d*g^3*i^3 - 4*a*b^6*c^5*d^2*g^3*i^3 + 5*a^2
*b^5*c^4*d^3*g^3*i^3 - 5*a^4*b^3*c^2*d^5*g^3*i^3 + 4*a^5*b^2*c*d^6*g^3*i^3
- a^6*b*d^7*g^3*i^3)*x^3 + (b^7*c^7*g^3*i^3 - a*b^6*c^6*d*g^3*i^3 - 9*a^2*b
^5*c^5*d^2*g^3*i^3 + 25*a^3*b^4*c^4*d^3*g^3*i^3 - 25*a^4*b^3*c^3*d^4*g^3*i^
3 + 9*a^5*b^2*c^2*d^5*g^3*i^3 + a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*x^2
+ 2*(a*b^6*c^7*g^3*i^3 - 4*a^2*b^5*c^6*d*g^3*i^3 + 5*a^3*b^4*c^5*d^2*g^3*i^
3 - 5*a^5*b^2*c^3*d^4*g^3*i^3 + 4*a^6*b*c^2*d^5*g^3*i^3 - a^7*c*d^6*g^3*i^3
)*x)
```

mupad [**B**]   time = 12.78, size = 1443, normalized size = 3.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^3*(c*i + d*i*x)^3),
x)
```

```
[Out] (A*b^2*d^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*12i)/(g^3*i^3*(a*
d - b*c)^5) - (3*B*b^2*d^2*log((e*(a + b*x))/(c + d*x))^2)/(g^3*i^3*(a*d -
b*c)^5) - (A*a^3*d^3)/(2*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (
A*b^3*c^3)/(2*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (B*a^3*d^3)/
(4*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (B*b^3*c^3)/(4*g^3*i^3*
(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (B*a*d*log((e*(a + b*x))/(c + d*x)
))/(2*g^3*i^3*(a*d - b*c)^2*(a + b*x)^2*(c + d*x)^2) - (B*b*c*log((e*(a + b
*x))/(c + d*x)))/(2*g^3*i^3*(a*d - b*c)^2*(a + b*x)^2*(c + d*x)^2) + (6*A*b
^3*d^3*x^3)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (7*A*a*b^2*c^
2*d)/(2*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (7*A*a^2*b*c*d^2)/
(2*g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (15*B*a*b^2*c^2*d)/(4*g
^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (15*B*a^2*b*c*d^2)/(4*g^3*i
^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (2*A*a^2*b*d^3*x)/(g^3*i^3*(a*d
 - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (3*B*a^2*b*d^3*x)/(g^3*i^3*(a*d - b*c)
^4*(a + b*x)^2*(c + d*x)^2) + (2*A*b^3*c^2*d*x)/(g^3*i^3*(a*d - b*c)^4*(a +
 b*x)^2*(c + d*x)^2) + (3*B*b^3*c^2*d*x)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2
*(c + d*x)^2) + (9*A*a*b^2*d^3*x^2)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c +
 d*x)^2) - (3*B*a*b^2*d^3*x^2)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)
^2) + (9*A*b^3*c*d^2*x^2)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) +
 (3*B*b^3*c*d^2*x^2)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) - (B*b
```

```
*d*x*log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a*d - b*c)^2*(a + b*x)^2*(c +
d*x)^2) + (6*B*b^3*d^3*x^3*log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a*d - b*
c)^4*(a + b*x)^2*(c + d*x)^2) + (9*B*a*b^2*d^3*x^2*log((e*(a + b*x))/(c + d
*x)))/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (9*B*b^3*c*d^2*x^2*
log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^
2) + (14*A*a*b^2*c*d^2*x)/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) +
 (3*B*a*b^2*c^2*d*log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a*d - b*c)^4*(a +
 b*x)^2*(c + d*x)^2) + (3*B*a^2*b*c*d^2*log((e*(a + b*x))/(c + d*x)))/(g^3*
i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (3*B*a^2*b*d^3*x*log((e*(a + b
*x))/(c + d*x)))/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(c + d*x)^2) + (3*B*b^3
*c^2*d*x*log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a*d - b*c)^4*(a + b*x)^2*(
c + d*x)^2) + (12*B*a*b^2*c*d^2*x*log((e*(a + b*x))/(c + d*x)))/(g^3*i^3*(a
*d - b*c)^4*(a + b*x)^2*(c + d*x)^2)
```

sympy [B] time = 51.41, size = 2106, normalized size = 4.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**3/(d*i*x+c*i)**3,x)
```

```
[Out] 6*A*b**2*d**2*log(x + (-6*A*a**6*b**2*d**8/(a*d - b*c)**5 + 36*A*a**5*b**3*
c*d**7/(a*d - b*c)**5 - 90*A*a**4*b**4*c**2*d**6/(a*d - b*c)**5 + 120*A*a**
3*b**5*c**3*d**5/(a*d - b*c)**5 - 90*A*a**2*b**6*c**4*d**4/(a*d - b*c)**5 +
 36*A*a*b**7*c**5*d**3/(a*d - b*c)**5 + 6*A*a*b**2*d**3 - 6*A*b**8*c**6*d**
2/(a*d - b*c)**5 + 6*A*b**3*c*d**2)/(12*A*b**3*d**3))/(g**3*i**3*(a*d - b*c
)**5) - 6*A*b**2*d**2*log(x + (6*A*a**6*b**2*d**8/(a*d - b*c)**5 - 36*A*a**
5*b**3*c*d**7/(a*d - b*c)**5 + 90*A*a**4*b**4*c**2*d**6/(a*d - b*c)**5 - 12
0*A*a**3*b**5*c**3*d**5/(a*d - b*c)**5 + 90*A*a**2*b**6*c**4*d**4/(a*d - b*
c)**5 - 36*A*a*b**7*c**5*d**3/(a*d - b*c)**5 + 6*A*a*b**2*d**3 + 6*A*b**8*c
**6*d**2/(a*d - b*c)**5 + 6*A*b**3*c*d**2)/(12*A*b**3*d**3))/(g**3*i**3*(a*
d - b*c)**5) - 3*B*b**2*d**2*log(e*(a + b*x)/(c + d*x))**2/(a**5*d**5*g**3*
i**3 - 5*a**4*b*c*d**4*g**3*i**3 + 10*a**3*b**2*c**2*d**3*g**3*i**3 - 10*a*
*2*b**3*c**3*d**2*g**3*i**3 + 5*a*b**4*c**4*d*g**3*i**3 - b**5*c**5*g**3*i*
*3) + (-B*a**3*d**3 + 7*B*a**2*b*c*d**2 + 4*B*a**2*b*d**3*x + 7*B*a*b**2*c*
*2*d + 28*B*a*b**2*c*d**2*x + 18*B*a*b**2*d**3*x**2 - B*b**3*c**3 + 4*B*b**
3*c**2*d*x + 18*B*b**3*c*d**2*x**2 + 12*B*b**3*d**3*x**3)*log(e*(a + b*x)/(
c + d*x))/(2*a**6*c**2*d**4*g**3*i**3 + 4*a**6*c*d**5*g**3*i**3*x + 2*a**6*
d**6*g**3*i**3*x**2 - 8*a**5*b*c**3*d**3*g**3*i**3 - 12*a**5*b*c**2*d**4*g*
*3*i**3*x + 4*a**5*b*d**6*g**3*i**3*x**3 + 12*a**4*b**2*c**4*d**2*g**3*i**3
 + 8*a**4*b**2*c**3*d**3*g**3*i**3*x - 18*a**4*b**2*c**2*d**4*g**3*i**3*x**
2 - 12*a**4*b**2*c*d**5*g**3*i**3*x**3 + 2*a**4*b**2*d**6*g**3*i**3*x**4 -
8*a**3*b**3*c**5*d*g**3*i**3 + 8*a**3*b**3*c**4*d**2*g**3*i**3*x + 32*a**3*
b**3*c**3*d**3*g**3*i**3*x**2 + 8*a**3*b**3*c**2*d**4*g**3*i**3*x**3 - 8*a*
*3*b**3*c*d**5*g**3*i**3*x**4 + 2*a**2*b**4*c**6*g**3*i**3 - 12*a**2*b**4*c
**5*d*g**3*i**3*x - 18*a**2*b**4*c**4*d**2*g**3*i**3*x**2 + 8*a**2*b**4*c**
3*d**3*g**3*i**3*x**3 + 12*a**2*b**4*c**2*d**4*g**3*i**3*x**4 + 4*a*b**5*c*
*6*g**3*i**3*x - 12*a*b**5*c**4*d**2*g**3*i**3*x**3 - 8*a*b**5*c**3*d**3*g*
*3*i**3*x**4 + 2*b**6*c**6*g**3*i**3*x**2 + 4*b**6*c**5*d*g**3*i**3*x**3 +
2*b**6*c**4*d**2*g**3*i**3*x**4) + (-2*A*a**3*d**3 + 14*A*a**2*b*c*d**2 + 1
4*A*a*b**2*c**2*d - 2*A*b**3*c**3 + 24*A*b**3*d**3*x**3 + B*a**3*d**3 - 15*
B*a**2*b*c*d**2 + 15*B*a*b**2*c**2*d - B*b**3*c**3 + x**2*(36*A*a*b**2*d**3
 + 36*A*b**3*c*d**2 - 12*B*a*b**2*d**3 + 12*B*b**3*c*d**2) + x*(8*A*a**2*b*
d**3 + 56*A*a*b**2*c*d**2 + 8*A*b**3*c**2*d - 12*B*a**2*b*d**3 + 12*B*b**3*
c**2*d))/(4*a**6*c**2*d**4*g**3*i**3 - 16*a**5*b*c**3*d**3*g**3*i**3 + 24*a
**4*b**2*c**4*d**2*g**3*i**3 - 16*a**3*b**3*c**5*d*g**3*i**3 + 4*a**2*b**4*
c**6*g**3*i**3 + x**4*(4*a**4*b**2*d**6*g**3*i**3 - 16*a**3*b**3*c*d**5*g**
3*i**3 + 24*a**2*b**4*c**2*d**4*g**3*i**3 - 16*a*b**5*c**3*d**3*g**3*i**3 +
 4*b**6*c**4*d**2*g**3*i**3) + x**3*(8*a**5*b*d**6*g**3*i**3 - 24*a**4*b**2
*c*d**5*g**3*i**3 + 16*a**3*b**3*c**2*d**4*g**3*i**3 + 16*a**2*b**4*c**3*d*
```

```
*3*g**3*i**3 - 24*a*b**5*c**4*d**2*g**3*i**3 + 8*b**6*c**5*d*g**3*i**3) + x
**2*(4*a**6*d**6*g**3*i**3 - 36*a**4*b**2*c**2*d**4*g**3*i**3 + 64*a**3*b**
3*c**3*d**3*g**3*i**3 - 36*a**2*b**4*c**4*d**2*g**3*i**3 + 4*b**6*c**6*g**3
*i**3) + x*(8*a**6*c*d**5*g**3*i**3 - 24*a**5*b*c**2*d**4*g**3*i**3 + 16*a*
*4*b**2*c**3*d**3*g**3*i**3 + 16*a**3*b**3*c**4*d**2*g**3*i**3 - 24*a**2*b*
*4*c**5*d*g**3*i**3 + 8*a*b**5*c**6*g**3*i**3))
```

3.54 $\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(ag+bgx)^4(ci+dix)^3}\,dx$

Optimal. Leaf size=563

$$-\frac{b^5(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3g^4i^3(a+bx)^3(bc-ad)^6}+\frac{5b^4d(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^4i^3(a+bx)^2(bc-ad)^6}-\frac{10b^3d^2(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^4i^3(a+bx)(bc-ad)^6}$$

```
[Out] 1/4*B*d^5*(b*x+a)^2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2-5*b*B*d^4*(b*x+a)/(-a*d+
b*c)^6/g^4/i^3/(d*x+c)-10*b^3*B*d^2*(d*x+c)/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/
4*b^4*B*d*(d*x+c)^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-1/9*b^5*B*(d*x+c)^3/(-a*
d+b*c)^6/g^4/i^3/(b*x+a)^3+5*b^2*B*d^3*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^6/g
^4/i^3-1/2*d^5*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^4/i^3/(
d*x+c)^2+5*b*d^4*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^4/i^3/(
d*x+c)-10*b^3*d^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^4/i^3/
(b*x+a)+5/2*b^4*d*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^4/i^
3/(b*x+a)^2-1/3*b^5*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^4/
i^3/(b*x+a)^3-10*b^2*d^3*ln((b*x+a)/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-
a*d+b*c)^6/g^4/i^3
```

Rubi [C] time = 1.70, antiderivative size = 825, normalized size of antiderivative = 1.47, number of steps used = 40, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{5b^2B\log^2(a+bx)d^3}{(bc-ad)^6g^4i^3}+\frac{5b^2B\log^2(c+dx)d^3}{(bc-ad)^6g^4i^3}-\frac{10b^2B\log(a+bx)d^3}{3(bc-ad)^6g^4i^3}-\frac{10b^2\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)d^3}{(bc-ad)^6g^4i^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^4*(c*i + d*i*x)^3),
x]
```

```
[Out] -(b^2*B)/(9*(b*c - a*d)^3*g^4*i^3*(a + b*x)^3) + (11*b^2*B*d)/(12*(b*c - a*
d)^4*g^4*i^3*(a + b*x)^2) - (47*b^2*B*d^2)/(6*(b*c - a*d)^5*g^4*i^3*(a + b*
x)) + (B*d^3)/(4*(b*c - a*d)^4*g^4*i^3*(c + d*x)^2) + (9*b*B*d^3)/(2*(b*c -
 a*d)^5*g^4*i^3*(c + d*x)) - (10*b^2*B*d^3*Log[a + b*x])/(3*(b*c - a*d)^6*g
^4*i^3) + (5*b^2*B*d^3*Log[a + b*x]^2)/((b*c - a*d)^6*g^4*i^3) - (b^2*(A +
B*Log[(e*(a + b*x))/(c + d*x)]))/(3*(b*c - a*d)^3*g^4*i^3*(a + b*x)^3) + (3
*b^2*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*(b*c - a*d)^4*g^4*i^3*(a +
b*x)^2) - (6*b^2*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^5*g
^4*i^3*(a + b*x)) - (d^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*(b*c - a*
d)^4*g^4*i^3*(c + d*x)^2) - (4*b*d^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/
((b*c - a*d)^5*g^4*i^3*(c + d*x)) - (10*b^2*d^3*Log[a + b*x]*(A + B*Log[(e*
(a + b*x))/(c + d*x)]))/((b*c - a*d)^6*g^4*i^3) + (10*b^2*B*d^3*Log[c + d*x
])/(3*(b*c - a*d)^6*g^4*i^3) - (10*b^2*B*d^3*Log[-((d*(a + b*x))/(b*c - a*d
))]*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3) + (10*b^2*d^3*(A + B*Log[(e*(a +
b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3) + (5*b^2*B*d^3*Log[
c + d*x]^2)/((b*c - a*d)^6*g^4*i^3) - (10*b^2*B*d^3*Log[a + b*x]*Log[(b*(c
+ d*x))/(b*c - a*d)])/((b*c - a*d)^6*g^4*i^3) - (10*b^2*B*d^3*PolyLog[2, -(
(d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^6*g^4*i^3) - (10*b^2*B*d^3*PolyLo
g[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^6*g^4*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(54c+54dx)^3(ag+bgx)^4}\,dx = \int \left(\frac{b^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{157464(bc-ad)^3g^4(a+bx)^4} - \frac{b^3d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{52488(bc-ad)^4g^4(a+bx)^3} + \frac{b^3d^2\left(A\right.}{26244(b\ldots}\right.$$

$$= -\frac{\left(5b^3d^3\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{a+bx}\,dx}{78732(bc-ad)^6g^4} + \frac{\left(5b^2d^4\right)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}\,dx}{78732(bc-ad)^6g^4} + \frac{\left(b^3d^2\right)\int \frac{A+B\ldots}{}}{26244(bc\ldots}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{472392(bc-ad)^3g^4(a+bx)^3} + \frac{b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{104976(bc-ad)^4g^4(a+bx)^2} - \frac{b^2d^2\left(A+\ldots\right.}{26244(bc\ldots}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{472392(bc-ad)^3g^4(a+bx)^3} + \frac{b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{104976(bc-ad)^4g^4(a+bx)^2} - \frac{b^2d^2\left(A+\ldots\right.}{26244(bc\ldots}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{472392(bc-ad)^3g^4(a+bx)^3} + \frac{b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{104976(bc-ad)^4g^4(a+bx)^2} - \frac{b^2d^2\left(A+\ldots\right.}{26244(bc\ldots}$$

$$= -\frac{b^2B}{1417176(bc-ad)^3g^4(a+bx)^3} + \frac{11b^2Bd}{1889568(bc-ad)^4g^4(a+bx)^2} - \frac{}{944784\ldots}$$

$$= -\frac{b^2B}{1417176(bc-ad)^3g^4(a+bx)^3} + \frac{11b^2Bd}{1889568(bc-ad)^4g^4(a+bx)^2} - \frac{}{944784\ldots}$$

$$= -\frac{b^2B}{1417176(bc-ad)^3g^4(a+bx)^3} + \frac{11b^2Bd}{1889568(bc-ad)^4g^4(a+bx)^2} - \frac{}{944784\ldots}$$

$$= -\frac{b^2B}{1417176(bc-ad)^3g^4(a+bx)^3} + \frac{11b^2Bd}{1889568(bc-ad)^4g^4(a+bx)^2} - \frac{}{944784\ldots}$$

Mathematica [C] time = 1.89, size = 637, normalized size = 1.13

$$-\frac{360b^2d^3\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) - 360b^2d^3\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right) + \frac{216b^2d^2(bc-ad)\left(B\log\left(\frac{e(a\ldots}{c\ldots}\right.\right.}{a+bx}\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])/((a*g + b*g*x)^4*(c*i + d*i*
x)^3),x]
```

```
[Out] -1/36*((4*b^2*B*(b*c - a*d)^3)/(a + b*x)^3 - (33*b^2*B*d*(b*c - a*d)^2)/(a
+ b*x)^2 + (216*b^3*B*c*d^2)/(a + b*x) - (216*a*b^2*B*d^3)/(a + b*x) + (66*
b^2*B*d^2*(b*c - a*d))/(a + b*x) - (9*B*d^3*(b*c - a*d)^2)/(c + d*x)^2 - (1
```

```
44*b^2*B*c*d^3)/(c + d*x) + (144*a*b*B*d^4)/(c + d*x) - (18*b*B*d^3*(b*c -
a*d))/(c + d*x) + 120*b^2*B*d^3*Log[a + b*x] + (12*b^2*(b*c - a*d)^3*(A + B
*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x)^3 - (54*b^2*d*(b*c - a*d)^2*(A +
B*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x)^2 + (216*b^2*d^2*(b*c - a*d)*(A
+ B*Log[(e*(a + b*x))/(c + d*x)]))/(a + b*x) + (18*d^3*(b*c - a*d)^2*(A + B
*Log[(e*(a + b*x))/(c + d*x)]))/(c + d*x)^2 + (144*b*d^3*(b*c - a*d)*(A + B
*Log[(e*(a + b*x))/(c + d*x)]))/(c + d*x) + 360*b^2*d^3*Log[a + b*x]*(A + B
*Log[(e*(a + b*x))/(c + d*x)]) - 120*b^2*B*d^3*Log[c + d*x] - 360*b^2*d^3*(
A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 180*b^2*B*d^3*(Log[a + b
*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a
+ b*x))/(-(b*c) + a*d)]) + 180*b^2*B*d^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*
d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])
)/((b*c - a*d)^6*g^4*i^3)
```

fricas [B] time = 1.08, size = 1509, normalized size = 2.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algor
ithm="fricas")
```

```
[Out] -1/36*(4*(3*A + B)*b^5*c^5 - 45*(2*A + B)*a*b^4*c^4*d + 360*(A + B)*a^2*b^3
*c^3*d^2 - 10*(12*A + 49*B)*a^3*b^2*c^2*d^3 - 180*(A - B)*a^4*b*c*d^4 + 9*(
2*A - B)*a^5*d^5 + 120*((3*A + B)*b^5*c*d^4 - (3*A + B)*a*b^4*d^5)*x^4 + 60
*(3*(3*A + 2*B)*b^5*c^2*d^3 + 2*(3*A - 2*B)*a*b^4*c*d^4 - (15*A + 2*B)*a^2*
b^3*d^5)*x^3 + 20*((6*A + 11*B)*b^5*c^3*d^2 + 21*(3*A + B)*a*b^4*c^2*d^3 -
3*(12*A + 13*B)*a^2*b^3*c*d^4 - (33*A - 7*B)*a^3*b^2*d^5)*x^2 + 180*(B*b^5*
d^5*x^5 + B*a^3*b^2*c^2*d^3 + (2*B*b^5*c*d^4 + 3*B*a*b^4*d^5)*x^4 + (B*b^5*
c^2*d^3 + 6*B*a*b^4*c*d^4 + 3*B*a^2*b^3*d^5)*x^3 + (3*B*a*b^4*c^2*d^3 + 6*B
*a^2*b^3*c*d^4 + B*a^3*b^2*d^5)*x^2 + (3*B*a^2*b^3*c^2*d^3 + 2*B*a^3*b^2*c*
d^4)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 5*((6*A + 5*B)*b^5*c^4*d - 36*(2*A
 + 3*B)*a*b^4*c^3*d^2 - 6*(24*A - 13*B)*a^2*b^3*c^2*d^3 + 4*(48*A + 13*B)*a
^3*b^2*c*d^4 + 9*(2*A - 3*B)*a^4*b*d^5)*x + 6*(20*(3*A + B)*b^5*d^5*x^5 + 2
*B*b^5*c^5 - 15*B*a*b^4*c^4*d + 60*B*a^2*b^3*c^3*d^2 + 60*A*a^3*b^2*c^2*d^3
 - 30*B*a^4*b*c*d^4 + 3*B*a^5*d^5 + 20*((6*A + 5*B)*b^5*c*d^4 + 9*A*a*b^4*d
^5)*x^4 + 10*((6*A + 11*B)*b^5*c^2*d^3 + 18*(2*A + B)*a*b^4*c*d^4 + 9*(2*A
- B)*a^2*b^3*d^5)*x^3 + 10*(2*B*b^5*c^3*d^2 + 9*(2*A + 3*B)*a*b^4*c^2*d^3 +
 36*A*a^2*b^3*c*d^4 + 3*(2*A - 3*B)*a^3*b^2*d^5)*x^2 - 5*(B*b^5*c^4*d - 12*
B*a*b^4*c^3*d^2 - 36*(A + B)*a^2*b^3*c^2*d^3 - 24*(A - B)*a^3*b^2*c*d^4 + 3
*B*a^4*b*d^5)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^9*c^6*d^2 - 6*a*b^8*c^5*
d^3 + 15*a^2*b^7*c^4*d^4 - 20*a^3*b^6*c^3*d^5 + 15*a^4*b^5*c^2*d^6 - 6*a^5*
b^4*c*d^7 + a^6*b^3*d^8)*g^4*i^3*x^5 + (2*b^9*c^7*d - 9*a*b^8*c^6*d^2 + 12*
a^2*b^7*c^5*d^3 + 5*a^3*b^6*c^4*d^4 - 30*a^4*b^5*c^3*d^5 + 33*a^5*b^4*c^2*d
^6 - 16*a^6*b^3*c*d^7 + 3*a^7*b^2*d^8)*g^4*i^3*x^4 + (b^9*c^8 - 18*a^2*b^7*
c^6*d^2 + 52*a^3*b^6*c^5*d^3 - 60*a^4*b^5*c^4*d^4 + 24*a^5*b^4*c^3*d^5 + 10
*a^6*b^3*c^2*d^6 - 12*a^7*b^2*c*d^7 + 3*a^8*b*d^8)*g^4*i^3*x^3 + (3*a*b^8*c
^8 - 12*a^2*b^7*c^7*d + 10*a^3*b^6*c^6*d^2 + 24*a^4*b^5*c^5*d^3 - 60*a^5*b^
4*c^4*d^4 + 52*a^6*b^3*c^3*d^5 - 18*a^7*b^2*c^2*d^6 + a^9*d^8)*g^4*i^3*x^2
+ (3*a^2*b^7*c^8 - 16*a^3*b^6*c^7*d + 33*a^4*b^5*c^6*d^2 - 30*a^5*b^4*c^5*d
^3 + 5*a^6*b^3*c^4*d^4 + 12*a^7*b^2*c^3*d^5 - 9*a^8*b*c^2*d^6 + 2*a^9*c*d^7
)*g^4*i^3*x + (a^3*b^6*c^8 - 6*a^4*b^5*c^7*d + 15*a^5*b^4*c^6*d^2 - 20*a^6*
b^3*c^5*d^3 + 15*a^7*b^2*c^4*d^4 - 6*a^8*b*c^3*d^5 + a^9*c^2*d^6)*g^4*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.05, size = 2616, normalized size = 4.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)
```

```
[Out] 10*d^2*e/i^3/(a*d-b*c)^7/g^4*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*
c+3/4*d^4/i^3/(a*d-b*c)^7/g^4*B/(d*x+c)^2*a*b^2*c^2-1/2*d^6/i^3/(a*d-b*c)^7
/g^4*A/(d*x+c)^2*a^3+1/4*d^6/i^3/(a*d-b*c)^7/g^4*B/(d*x+c)^2*a^3+3/2*d^5/i^
3/(a*d-b*c)^7/g^4*A/(d*x+c)^2*a^2*b*c-10*d^3*e/i^3/(a*d-b*c)^7/g^4*B*b^3/(1
/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-3/4*d^5/i^3/(a*d-b*c)^7/g^4*B/(d*x+
c)^2*a^2*b*c+9*d^4/i^3/(a*d-b*c)^7/g^4*B*b^2/(d*x+c)*a*c-8*d^4/i^3/(a*d-b*c
)^7/g^4*A*b^2/(d*x+c)*a*c-3/2*d^4/i^3/(a*d-b*c)^7/g^4*A/(d*x+c)^2*a*b^2*c^2
+4*d^3/i^3/(a*d-b*c)^7/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^
2+5/4*d^2*e^2/i^3/(a*d-b*c)^7/g^4*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^2*a+5/2*d^2*e^2/i^3/(a*d-b*c)^7/g^4*A*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c
/d*e+b/d*e)^2*a-5/2*d*e^2/i^3/(a*d-b*c)^7/g^4*A*b^5/(1/(d*x+c)*a*e-1/(d*x+c
)*b*c/d*e+b/d*e)^2*c-10*d^3*e/i^3/(a*d-b*c)^7/g^4*A*b^3/(1/(d*x+c)*a*e-1/(d
*x+c)*b*c/d*e+b/d*e)*a+1/2*d^3/i^3/(a*d-b*c)^7/g^4*B*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)/(d*x+c)^2*b^3*c^3+4*d^5/i^3/(a*d-b*c)^7/g^4*B*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)*b/(d*x+c)*a^2-5/4*d*e^2/i^3/(a*d-b*c)^7/g^4*B*b^5/(1/(d*x+c)*a
*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+9/2*d^4/i^3/(a*d-b*c)^7/g^4*A*b^2*a-9/2*d^3
/i^3/(a*d-b*c)^7/g^4*A*b^3*c-19/4*d^4/i^3/(a*d-b*c)^7/g^4*B*b^2*a+19/4*d^3/
i^3/(a*d-b*c)^7/g^4*B*b^3*c-9/2*d^5/i^3/(a*d-b*c)^7/g^4*B*b/(d*x+c)*a^2+1/2
*d^3/i^3/(a*d-b*c)^7/g^4*A/(d*x+c)^2*b^3*c^3-1/4*d^3/i^3/(a*d-b*c)^7/g^4*B/
(d*x+c)^2*b^3*c^3+10*d^3/i^3/(a*d-b*c)^7/g^4*A*b^3*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)*c-1/2*d^6/i^3/(a*d-b*c)^7/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*
x+c)^2*a^3-5*d^4/i^3/(a*d-b*c)^7/g^4*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^
2*a-10*d^4/i^3/(a*d-b*c)^7/g^4*A*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+9/2*
d^4/i^3/(a*d-b*c)^7/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+5*d^3/i^3/(
a*d-b*c)^7/g^4*B*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-9/2*d^3/i^3/(a*d-b
*c)^7/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c+4*d^5/i^3/(a*d-b*c)^7/g^4
*A*b/(d*x+c)*a^2+4*d^3/i^3/(a*d-b*c)^7/g^4*A*b^3/(d*x+c)*c^2-9/2*d^3/i^3/(a
*d-b*c)^7/g^4*B*b^3/(d*x+c)*c^2+1/3*e^3/i^3/(a*d-b*c)^7/g^4*A*b^6/(1/(d*x+c
)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c+1/9*e^3/i^3/(a*d-b*c)^7/g^4*B*b^6/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c+10*d^2*e/i^3/(a*d-b*c)^7/g^4*B*b^4/(1
/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-1/3*d*e^3/i^3/(a*d-b*c)^7/g^4*A*b^5
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-1/9*d*e^3/i^3/(a*d-b*c)^7/g^4*
B*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-1/3*d*e^3/i^3/(a*d-b*c)^7
/g^4*B*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)*a-5/2*d*e^2/i^3/(a*d-b*c)^7/g^4*B*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*
c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-10*d^3*e/i^3/(a*d-b*c)^7/g
^4*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)*a+5/2*d^2*e^2/i^3/(a*d-b*c)^7/g^4*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-3/2*d^4/i^3/(a*d-b*c)^7/g^4*
B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2-8*d^4/i^3/(a*d-b*c)^7
/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*c*a+3/2*d^5/i^3/(a*d-b*c
)^7/g^4*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c+10*d^2*e/i^3/(a
*d-b*c)^7/g^4*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b
*c)/(d*x+c)/d*e)*c+1/3*e^3/i^3/(a*d-b*c)^7/g^4*B*b^6/(1/(d*x+c)*a*e-1/(d*x+
c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c
```

maxima [B] time = 5.65, size = 3816, normalized size = 6.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, algor
ithm="maxima")
```

```
[Out] -1/6*B*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2*c^2*d^2 +
 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 + 10*(2*b^
4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - 11*a*b^3*
c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2 - 5*a*b^7*c^4*d^
3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d^7
)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a^3
*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4*i
^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3 -
 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^4*
i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c^4
*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g^4
*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 - 10*a^5*
b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*g^4*i^3*x
+ (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^3
+ 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*x + a)/((b^6*c
^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c
^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x + c)/((b^6*
c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*
c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x
 + c)) - 1/6*A*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2*c
^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 +
10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - 1
1*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2 - 5*a*b^
7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5
*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3
+ 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^
7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c
^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d
^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4
*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8*
d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 -
 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*g^
4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2*
c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*x + a)
/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a
^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x + c
)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*
a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3)) - 1/36*(4*b^5*c^5 - 45
*a*b^4*c^4*d + 360*a^2*b^3*c^3*d^2 - 490*a^3*b^2*c^2*d^3 + 180*a^4*b*c*d^4
- 9*a^5*d^5 + 120*(b^5*c*d^4 - a*b^4*d^5)*x^4 + 120*(3*b^5*c^2*d^3 - 2*a*b^
4*c*d^4 - a^2*b^3*d^5)*x^3 + 20*(11*b^5*c^3*d^2 + 21*a*b^4*c^2*d^3 - 39*a^2
*b^3*c*d^4 + 7*a^3*b^2*d^5)*x^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b
^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)
*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c
^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a)^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^
2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*
a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 +
(3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(d*x + c)^2 - 5*(5*b^5*c^4*d -
108*a*b^4*c^3*d^2 + 78*a^2*b^3*c^2*d^3 + 52*a^3*b^2*c*d^4 - 27*a^4*b*d^5)*x
 + 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (
b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2
*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*lo
g(b*x + a) - 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^
5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d
^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*
```

```
d^4)*x - 3*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4
 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6
*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x
)*log(b*x + a))*log(d*x + c))*B/(a^3*b^6*c^8*g^4*i^3 - 6*a^4*b^5*c^7*d*g^4*
i^3 + 15*a^5*b^4*c^6*d^2*g^4*i^3 - 20*a^6*b^3*c^5*d^3*g^4*i^3 + 15*a^7*b^2*
c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*d^5*g^4*i^3 + a^9*c^2*d^6*g^4*i^3 + (b^9*c^6*
d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*g^4*i^3 + 15*a^2*b^7*c^4*d^4*g^4*i^3 - 20*a^3
*b^6*c^3*d^5*g^4*i^3 + 15*a^4*b^5*c^2*d^6*g^4*i^3 - 6*a^5*b^4*c*d^7*g^4*i^3
 + a^6*b^3*d^8*g^4*i^3)*x^5 + (2*b^9*c^7*d*g^4*i^3 - 9*a*b^8*c^6*d^2*g^4*i^
3 + 12*a^2*b^7*c^5*d^3*g^4*i^3 + 5*a^3*b^6*c^4*d^4*g^4*i^3 - 30*a^4*b^5*c^3
*d^5*g^4*i^3 + 33*a^5*b^4*c^2*d^6*g^4*i^3 - 16*a^6*b^3*c*d^7*g^4*i^3 + 3*a^
7*b^2*d^8*g^4*i^3)*x^4 + (b^9*c^8*g^4*i^3 - 18*a^2*b^7*c^6*d^2*g^4*i^3 + 52
*a^3*b^6*c^5*d^3*g^4*i^3 - 60*a^4*b^5*c^4*d^4*g^4*i^3 + 24*a^5*b^4*c^3*d^5*
g^4*i^3 + 10*a^6*b^3*c^2*d^6*g^4*i^3 - 12*a^7*b^2*c*d^7*g^4*i^3 + 3*a^8*b*d
^8*g^4*i^3)*x^3 + (3*a*b^8*c^8*g^4*i^3 - 12*a^2*b^7*c^7*d*g^4*i^3 + 10*a^3*
b^6*c^6*d^2*g^4*i^3 + 24*a^4*b^5*c^5*d^3*g^4*i^3 - 60*a^5*b^4*c^4*d^4*g^4*i
^3 + 52*a^6*b^3*c^3*d^5*g^4*i^3 - 18*a^7*b^2*c^2*d^6*g^4*i^3 + a^9*d^8*g^4*
i^3)*x^2 + (3*a^2*b^7*c^8*g^4*i^3 - 16*a^3*b^6*c^7*d*g^4*i^3 + 33*a^4*b^5*c
^6*d^2*g^4*i^3 - 30*a^5*b^4*c^5*d^3*g^4*i^3 + 5*a^6*b^3*c^4*d^4*g^4*i^3 + 1
2*a^7*b^2*c^3*d^5*g^4*i^3 - 9*a^8*b*c^2*d^6*g^4*i^3 + 2*a^9*c*d^7*g^4*i^3)*
x)
```

mupad [B] time = 16.59, size = 2291, normalized size = 4.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))/((a*g + b*g*x)^4*(c*i + d*i*x)^3),
x)
```

```
[Out] ((12*A*b^4*c^4 - 18*A*a^4*d^4 + 9*B*a^4*d^4 + 4*B*b^4*c^4 + 282*A*a^2*b^2*c
^2*d^2 + 319*B*a^2*b^2*c^2*d^2 - 78*A*a*b^3*c^3*d + 162*A*a^3*b*c*d^3 - 41*
B*a*b^3*c^3*d - 171*B*a^3*b*c*d^3)/(6*(a*d - b*c)) + (10*x^2*(33*A*a^2*b^2*
d^4 - 7*B*a^2*b^2*d^4 + 6*A*b^4*c^2*d^2 + 11*B*b^4*c^2*d^2 + 69*A*a*b^3*c*d
^3 + 32*B*a*b^3*c*d^3))/(3*(a*d - b*c)) + (5*x*(18*A*a^3*b*d^4 - 27*B*a^3*b
*d^4 - 6*A*b^4*c^3*d - 5*B*b^4*c^3*d + 66*A*a*b^3*c^2*d^2 + 210*A*a^2*b^2*c
*d^3 + 103*B*a*b^3*c^2*d^2 + 25*B*a^2*b^2*c*d^3))/(6*(a*d - b*c)) + (10*x^3
*(15*A*a*b^3*d^4 + 2*B*a*b^3*d^4 + 9*A*b^4*c*d^3 + 6*B*b^4*c*d^3))/(a*d - b
*c) + (20*x^4*(3*A*b^4*d^4 + B*b^4*d^4))/(a*d - b*c))/(x^5*(6*a^4*b^3*d^6*g
^4*i^3 + 6*b^7*c^4*d^2*g^4*i^3 - 24*a*b^6*c^3*d^3*g^4*i^3 - 24*a^3*b^4*c*d^
5*g^4*i^3 + 36*a^2*b^5*c^2*d^4*g^4*i^3) + x*(18*a^2*b^5*c^6*g^4*i^3 + 12*a^
7*c*d^5*g^4*i^3 - 60*a^3*b^4*c^5*d*g^4*i^3 - 30*a^6*b*c^2*d^4*g^4*i^3 + 60*
a^4*b^3*c^4*d^2*g^4*i^3) + x^2*(6*a^7*d^6*g^4*i^3 + 18*a*b^6*c^6*g^4*i^3 +
12*a^6*b*c*d^5*g^4*i^3 - 36*a^2*b^5*c^5*d*g^4*i^3 - 30*a^3*b^4*c^4*d^2*g^4*
i^3 + 120*a^4*b^3*c^3*d^3*g^4*i^3 - 90*a^5*b^2*c^2*d^4*g^4*i^3) + x^3*(6*b^
7*c^6*g^4*i^3 + 18*a^6*b*d^6*g^4*i^3 + 12*a*b^6*c^5*d*g^4*i^3 - 36*a^5*b^2*
c*d^5*g^4*i^3 - 90*a^2*b^5*c^4*d^2*g^4*i^3 + 120*a^3*b^4*c^3*d^3*g^4*i^3 -
30*a^4*b^3*c^2*d^4*g^4*i^3) + x^4*(18*a^5*b^2*d^6*g^4*i^3 + 12*b^7*c^5*d*g^
4*i^3 - 30*a*b^6*c^4*d^2*g^4*i^3 - 60*a^4*b^3*c*d^5*g^4*i^3 + 60*a^3*b^4*c^
2*d^4*g^4*i^3) + 6*a^3*b^4*c^6*g^4*i^3 + 6*a^7*c^2*d^4*g^4*i^3 - 24*a^4*b^3
*c^5*d*g^4*i^3 - 24*a^6*b*c^3*d^3*g^4*i^3 + 36*a^5*b^2*c^4*d^2*g^4*i^3) + (
log((e*(a + b*x))/(c + d*x))*(x^2*((5*B*b*d*(a*d + b*c))/(g^4*i^3*(a^2*d^2
+ b^2*c^2 - 2*a*b*c*d)^2) + (5*B*b*d*(2*a*d + b*c))/(3*g^4*i^3*(a^2*d^2 + b
^2*c^2 - 2*a*b*c*d)^2) + (10*B*b^2*d^3*((2*a*c*(a*d - b*c))/d + ((a*d + b*c
)^2*(a*d - b*c))/(b*d^2)))/(g^4*i^3*(a*d - b*c)^4*(a^2*d^2 + b^2*c^2 - 2*a*
b*c*d))) + x^3*((5*B*b^2*d^2)/(g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) +
 (20*B*b^2*d^2*(a*d + b*c))/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a
*b*c*d))) + x*((5*B*(a*d + b*c)*(2*a*d + b*c))/(3*g^4*i^3*(a^2*d^2 + b^2*c^
2 - 2*a*b*c*d)^2) - (5*B)/(6*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (5*
B*a*b*c*d)/(g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (20*B*a*b*c*d*(a*d
```

```
 + b*c))/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - (B*(3*a
*d + 2*b*c))/(6*g^4*i^3*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (5*B*a*c
*(2*a*d + b*c))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (10*B*b^3*d
^3*x^4)/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (10*B*a^2
*b*c^2*d)/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))))/(b^2*d*
x^5 + (x^4*(3*a*b^2*d^2 + 2*b^3*c*d))/(b*d) + (a^3*c^2)/(b*d) + (x^2*(a^3*d
^2 + 3*a*b^2*c^2 + 6*a^2*b*c*d))/(b*d) + (x^3*(b^3*c^2 + 3*a^2*b*d^2 + 6*a*
b^2*c*d))/(b*d) + (x*(3*a^2*b*c^2 + 2*a^3*c*d))/(b*d)) + (b^2*d^3*atan((b^2
*d^3*(3*A + B)*((a^6*d^6*g^4*i^3 - b^6*c^6*g^4*i^3 + 4*a*b^5*c^5*d*g^4*i^3
- 4*a^5*b*c*d^5*g^4*i^3 - 5*a^2*b^4*c^4*d^2*g^4*i^3 + 5*a^4*b^2*c^2*d^4*g^4
*i^3)/(a^5*d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g^4*i^3 - 5*a^4*b*
c*d^4*g^4*i^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^2*d^3*g^4*i^3) +
2*b*d*x)*(a^5*d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g^4*i^3 - 5*a^4
*b*c*d^4*g^4*i^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^2*d^3*g^4*i^3)
*10i)/(g^4*i^3*(a*d - b*c)^6*(30*A*b^2*d^3 + 10*B*b^2*d^3)))*(3*A + B)*20i)
/(3*g^4*i^3*(a*d - b*c)^6) - (5*B*b^2*d^3*log((e*(a + b*x))/(c + d*x))^2)/(
g^4*i^3*(a*d - b*c)^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))/(b*g*x+a*g)**4/(d*i*x+c*i)**3,x)
[Out] Timed out
```

3.55 $\int (ag+bgx)^3(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx$

Optimal. Leaf size=539

$$-\frac{Bg^3i(bc-ad)^5\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(6B\log\left(\frac{e(a+bx)}{c+dx}\right)+6A+11B\right)}{60b^2d^4}-\frac{Bg^3i(a+bx)(bc-ad)^4\left(6B\log\left(\frac{e(a+bx)}{c+dx}\right)+6A+5\right.}{60b^2d^3}$$

```
[Out] 3/10*B^2*(-a*d+b*c)^4*g^3*i*x/b/d^3-3/20*B^2*(-a*d+b*c)^3*g^3*i*(d*x+c)^2/d
^4+1/30*b*B^2*(-a*d+b*c)^2*g^3*i*(d*x+c)^3/d^4-1/30*B*(-a*d+b*c)^2*g^3*i*(b
*x+a)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2/d-1/10*B*(-a*d+b*c)*g^3*i*(b*x+a)^4
*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2+1/20*(-a*d+b*c)*g^3*i*(b*x+a)^4*(A+B*ln(e*
(b*x+a)/(d*x+c)))^2/b^2+1/5*g^3*i*(b*x+a)^4*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+
c)))^2/b+1/60*B*(-a*d+b*c)^3*g^3*i*(b*x+a)^2*(3*A+B+3*B*ln(e*(b*x+a)/(d*x+c
)))/b^2/d^2-1/60*B*(-a*d+b*c)^4*g^3*i*(b*x+a)*(6*A+5*B+6*B*ln(e*(b*x+a)/(d*
x+c)))/b^2/d^3-1/60*B*(-a*d+b*c)^5*g^3*i*ln((-a*d+b*c)/b/(d*x+c))*(6*A+11*B
+6*B*ln(e*(b*x+a)/(d*x+c)))/b^2/d^4-1/10*B^2*(-a*d+b*c)^5*g^3*i*ln(d*x+c)/b
^2/d^4-1/10*B^2*(-a*d+b*c)^5*g^3*i*polylog(2,d*(b*x+a)/b/(d*x+c))/b^2/d^4
```

Rubi [A] time = 1.78, antiderivative size = 622, normalized size of antiderivative = 1.15, number of steps used = 54, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{B^2g^3i(bc-ad)^5\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{10b^2d^4}+\frac{Bg^3i(bc-ad)^5\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{10b^2d^4}+\frac{Bg^3i(a+bx)^2(bc-a}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] -(A*B*(b*c - a*d)^4*g^3*i*x)/(10*b*d^3) + (B^2*(b*c - a*d)^4*g^3*i*x)/(60*b
*d^3) - (B^2*(b*c - a*d)^3*g^3*i*(a + b*x)^2)/(30*b^2*d^2) + (B^2*(b*c - a*
d)^2*g^3*i*(a + b*x)^3)/(30*b^2*d) - (B^2*(b*c - a*d)^4*g^3*i*(a + b*x)*Log
[(e*(a + b*x))/(c + d*x)])/(10*b^2*d^3) + (B*(b*c - a*d)^3*g^3*i*(a + b*x)^
2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(20*b^2*d^2) - (B*(b*c - a*d)^2*g^3
*i*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(30*b^2*d) - (B*(b*c -
 a*d)*g^3*i*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(10*b^2) + ((
b*c - a*d)*g^3*i*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(4*b^2
) + (d*g^3*i*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(5*b^2) +
(B^2*(b*c - a*d)^5*g^3*i*Log[c + d*x])/(12*b^2*d^4) - (B^2*(b*c - a*d)^5*g^
3*i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(10*b^2*d^4) + (B*(b*c
- a*d)^5*g^3*i*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(10*b^2*d
^4) + (B^2*(b*c - a*d)^5*g^3*i*Log[c + d*x]^2)/(20*b^2*d^4) - (B^2*(b*c - a
*d)^5*g^3*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(10*b^2*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (55c+55dx)(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2dx = \int\left(\frac{55(bc-ad)(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b}+ \cdots\right.$$

$$= \frac{(55(bc-ad))\int(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2dx}{b}$$

$$= \frac{55(bc-ad)g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^2}+\frac{11dg\cdots}{\cdots}$$

$$= \frac{55(bc-ad)g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^2}+\frac{11dg\cdots}{\cdots}$$

$$= \frac{55(bc-ad)g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^2}+\frac{11dg\cdots}{\cdots}$$

$$= \frac{55(bc-ad)g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^2}+\frac{11dg\cdots}{\cdots}$$

$$= -\frac{11AB(bc-ad)^4g^3x}{2bd^3}+\frac{11B(bc-ad)^3g^3(a+bx)^2\left(A\cdots\right.}{4b^2d^2}$$

$$= -\frac{11AB(bc-ad)^4g^3x}{2bd^3}-\frac{11B^2(bc-ad)^4g^3(a+bx)\log\left(\cdots\right.}{2b^2d^3}$$

$$= -\frac{11AB(bc-ad)^4g^3x}{2bd^3}-\frac{11B^2(bc-ad)^4g^3(a+bx)\log\left(\cdots\right.}{2b^2d^3}$$

$$= -\frac{11AB(bc-ad)^4g^3x}{2bd^3}+\frac{11B^2(bc-ad)^4g^3x}{12bd^3}-\frac{11B^2(bc\cdots}{\cdots}$$

$$= -\frac{11AB(bc-ad)^4g^3x}{2bd^3}+\frac{11B^2(bc-ad)^4g^3x}{12bd^3}-\frac{11B^2(bc\cdots}{\cdots}$$

$$= -\frac{11AB(bc-ad)^4g^3x}{2bd^3}+\frac{11B^2(bc-ad)^4g^3x}{12bd^3}-\frac{11B^2(bc\cdots}{\cdots}$$

$$= -\frac{11AB(bc-ad)^4g^3x}{2bd^3}+\frac{11B^2(bc-ad)^4g^3x}{12bd^3}-\frac{11B^2(bc\cdots}{\cdots}$$

Mathematica [A] time = 0.76, size = 905, normalized size = 1.68

$$\frac{g^3i\left(4d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2(a+bx)^5+5(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2(a+bx)^4-\frac{5B(bc-ad)^2\left(-6B\log(c+dx)(bc-ad)\cdots\right.}{\cdots}\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]
)^2,x]
```

```
[Out] (g^3*i*(5*(b*c - a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 +
4*d*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (5*B*(b*c - a*d)^2
*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))
/(c + d*x)] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c
+ d*x)]) + 2*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*
c - a*d)^3*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x
)])*Log[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2
*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (-(b*c) + a*d)*Lo
g[c + d*x]) + 3*B*(b*c - a*d)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log
[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(3*d^4
) + (B*(b*c - a*d)*(24*A*b*d*(b*c - a*d)^3*x + 24*B*d*(b*c - a*d)^3*(a + b*
x)*Log[(e*(a + b*x))/(c + d*x)] - 12*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*L
og[(e*(a + b*x))/(c + d*x)]) + 8*d^3*(b*c - a*d)*(a + b*x)^3*(A + B*Log[(e*
(a + b*x))/(c + d*x)]) - 6*d^4*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*
x)]) - 24*B*(b*c - a*d)^4*Log[c + d*x] - 24*(b*c - a*d)^4*(A + B*Log[(e*(a
+ b*x))/(c + d*x)])*Log[c + d*x] + 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x -
 d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + B*(b*c - a*d)*(6*b*d*(b*
c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*
c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^3*(b*d*x + (-(b*c) + a*d)*Log[c
 + d*x]) + 12*B*(b*c - a*d)^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c
 + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(3*d^4))
)/(20*b^2)
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2b^3dg^3ix^4 + A^2a^3cg^3i + \left(A^2b^3c + 3\,A^2ab^2d\right)g^3ix^3 + 3\left(A^2ab^2c + A^2a^2bd\right)g^3ix^2 + \left(3\,A^2a^2bc + A^2a\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="fricas")
```

```
[Out] integral(A^2*b^3*d*g^3*i*x^4 + A^2*a^3*c*g^3*i + (A^2*b^3*c + 3*A^2*a*b^2*d
)*g^3*i*x^3 + 3*(A^2*a*b^2*c + A^2*a^2*b*d)*g^3*i*x^2 + (3*A^2*a^2*b*c + A^
2*a^3*d)*g^3*i*x + (B^2*b^3*d*g^3*i*x^4 + B^2*a^3*c*g^3*i + (B^2*b^3*c + 3*
B^2*a*b^2*d)*g^3*i*x^3 + 3*(B^2*a*b^2*c + B^2*a^2*b*d)*g^3*i*x^2 + (3*B^2*a
^2*b*c + B^2*a^3*d)*g^3*i*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^3*d*
g^3*i*x^4 + A*B*a^3*c*g^3*i + (A*B*b^3*c + 3*A*B*a*b^2*d)*g^3*i*x^3 + 3*(A*
B*a*b^2*c + A*B*a^2*b*d)*g^3*i*x^2 + (3*A*B*a^2*b*c + A*B*a^3*d)*g^3*i*x)*l
og((b*e*x + a*e)/(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.59, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{3} \left(dix+ci\right) \left(B\ln\left(\frac{\left(bx+a\right)e}{dx+c}\right)+A\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 2.60, size = 3186, normalized size = 5.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="maxima")
```

```
[Out] 1/5*A^2*b^3*d*g^3*i*x^5 + 1/4*A^2*b^3*c*g^3*i*x^4 + 3/4*A^2*a*b^2*d*g^3*i*x
^4 + A^2*a*b^2*c*g^3*i*x^3 + A^2*a^2*b*d*g^3*i*x^3 + 3/2*A^2*a^2*b*c*g^3*i*
x^2 + 1/2*A^2*a^3*d*g^3*i*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) +
 a*log(b*x + a)/b - c*log(d*x + c)/d)*A*B*a^3*c*g^3*i + 3*(x^2*log(b*e*x/(d
*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b
*c - a*d)*x/(b*d))*A*B*a^2*b*c*g^3*i + (2*x^3*log(b*e*x/(d*x + c) + a*e/(d*
x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b
*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*b^2*c*g^3*i + 1/12*(6
*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*
log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^
3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*b^3*c*g^3*i + (x^2*log(b*e
*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2
 - (b*c - a*d)*x/(b*d))*A*B*a^3*d*g^3*i + (2*x^3*log(b*e*x/(d*x + c) + a*e/
(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d -
a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a^2*b*d*g^3*i + 1/4*
(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^
4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*
d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*a*b^2*d*g^3*i + 1/30*(12
*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^
5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*
b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b
^4*d^4))*A*B*b^3*d*g^3*i + A^2*a^3*c*g^3*i*x - 1/60*(6*a^4*c*d^4*g^3*i - (6
*g^3*i*log(e) + 5*g^3*i)*b^4*c^5 + (30*g^3*i*log(e) + 19*g^3*i)*a*b^3*c^4*d
 - (60*g^3*i*log(e) + 23*g^3*i)*a^2*b^2*c^3*d^2 + 3*(20*g^3*i*log(e) + g^3*
i)*a^3*b*c^2*d^3)*B^2*log(d*x + c)/(b*d^4) + 1/10*(b^5*c^5*g^3*i - 5*a*b^4*
c^4*d*g^3*i + 10*a^2*b^3*c^3*d^2*g^3*i - 10*a^3*b^2*c^2*d^3*g^3*i + 5*a^4*b
*c*d^4*g^3*i - a^5*d^5*g^3*i)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) +
 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^2*d^4) + 1/60*(12*B^2*b^5*d
^5*g^3*i*x^5*log(e)^2 + 3*((5*g^3*i*log(e)^2 - 2*g^3*i*log(e))*b^5*c*d^4 +
(15*g^3*i*log(e)^2 + 2*g^3*i*log(e))*a*b^4*d^5)*B^2*x^4 - 2*((g^3*i*log(e)
- g^3*i)*b^5*c^2*d^3 - 2*(15*g^3*i*log(e)^2 - 5*g^3*i*log(e) - g^3*i)*a*b^4
*c*d^4 - (30*g^3*i*log(e)^2 + 11*g^3*i*log(e) + g^3*i)*a^2*b^3*d^5)*B^2*x^3
 + ((3*g^3*i*log(e) - 2*g^3*i)*b^5*c^3*d^2 - 3*(5*g^3*i*log(e) - 4*g^3*i)*a
*b^4*c^2*d^3 + 3*(30*g^3*i*log(e)^2 - 5*g^3*i*log(e) - 6*g^3*i)*a^2*b^3*c*d
^4 + (30*g^3*i*log(e)^2 + 27*g^3*i*log(e) + 8*g^3*i)*a^3*b^2*d^5)*B^2*x^2 -
 ((6*g^3*i*log(e) - g^3*i)*b^5*c^4*d - 2*(15*g^3*i*log(e) - 4*g^3*i)*a*b^4*
c^3*d^2 + 12*(5*g^3*i*log(e) - 2*g^3*i)*a^2*b^3*c^2*d^3 - 2*(30*g^3*i*log(e
)^2 + 15*g^3*i*log(e) - 14*g^3*i)*a^3*b^2*c*d^4 - (6*g^3*i*log(e) + 11*g^3*
i)*a^4*b*d^5)*B^2*x + 3*(4*B^2*b^5*d^5*g^3*i*x^5 + 20*B^2*a^3*b^2*c*d^4*g^3
*i*x + 5*(b^5*c*d^4*g^3*i + 3*a*b^4*d^5*g^3*i)*B^2*x^4 + 20*(a*b^4*c*d^4*g^
3*i + a^2*b^3*d^5*g^3*i)*B^2*x^3 + 10*(3*a^2*b^3*c*d^4*g^3*i + a^3*b^2*d^5*
g^3*i)*B^2*x^2 + (5*a^4*b*c*d^4*g^3*i - a^5*d^5*g^3*i)*B^2)*log(b*x + a)^2
+ 3*(4*B^2*b^5*d^5*g^3*i*x^5 + 20*B^2*a^3*b^2*c*d^4*g^3*i*x + 5*(b^5*c*d^4*
g^3*i + 3*a*b^4*d^5*g^3*i)*B^2*x^4 + 20*(a*b^4*c*d^4*g^3*i + a^2*b^3*d^5*g^
3*i)*B^2*x^3 + 10*(3*a^2*b^3*c*d^4*g^3*i + a^3*b^2*d^5*g^3*i)*B^2*x^2 - (b^
5*c^5*g^3*i - 5*a*b^4*c^4*d*g^3*i + 10*a^2*b^3*c^3*d^2*g^3*i - 10*a^3*b^2*c
^2*d^3*g^3*i)*B^2)*log(d*x + c)^2 + (24*B^2*b^5*d^5*g^3*i*x^5*log(e) + 6*((
5*g^3*i*log(e) - g^3*i)*b^5*c*d^4 + (15*g^3*i*log(e) + g^3*i)*a*b^4*d^5)*B^
2*x^4 - 2*(b^5*c^2*d^3*g^3*i - 10*(6*g^3*i*log(e) - g^3*i)*a*b^4*c*d^4 - (6
0*g^3*i*log(e) + 11*g^3*i)*a^2*b^3*d^5)*B^2*x^3 + 3*(b^5*c^3*d^2*g^3*i - 5*
```

```
a*b^4*c^2*d^3*g^3*i + 5*(12*g^3*i*log(e) - g^3*i)*a^2*b^3*c*d^4 + (20*g^3*i
*log(e) + 9*g^3*i)*a^3*b^2*d^5)*B^2*x^2 - 6*(b^5*c^4*d*g^3*i - 5*a*b^4*c^3*
d^2*g^3*i + 10*a^2*b^3*c^2*d^3*g^3*i - a^4*b*d^5*g^3*i - 5*(4*g^3*i*log(e)
+ g^3*i)*a^3*b^2*c*d^4)*B^2*x - (6*a*b^4*c^4*d*g^3*i - 27*a^2*b^3*c^3*d^2*g
^3*i + 47*a^3*b^2*c^2*d^3*g^3*i - (30*g^3*i*log(e) + 31*g^3*i)*a^4*b*c*d^4
+ (6*g^3*i*log(e) + 5*g^3*i)*a^5*d^5)*B^2)*log(b*x + a) - (24*B^2*b^5*d^5*g
^3*i*x^5*log(e) + 6*((5*g^3*i*log(e) - g^3*i)*b^5*c*d^4 + (15*g^3*i*log(e)
+ g^3*i)*a*b^4*d^5)*B^2*x^4 - 2*(b^5*c^2*d^3*g^3*i - 10*(6*g^3*i*log(e) - g
^3*i)*a*b^4*c*d^4 - (60*g^3*i*log(e) + 11*g^3*i)*a^2*b^3*d^5)*B^2*x^3 + 3*(
b^5*c^3*d^2*g^3*i - 5*a*b^4*c^2*d^3*g^3*i + 5*(12*g^3*i*log(e) - g^3*i)*a^2
*b^3*c*d^4 + (20*g^3*i*log(e) + 9*g^3*i)*a^3*b^2*d^5)*B^2*x^2 - 6*(b^5*c^4*
d*g^3*i - 5*a*b^4*c^3*d^2*g^3*i + 10*a^2*b^3*c^2*d^3*g^3*i - a^4*b*d^5*g^3*
i - 5*(4*g^3*i*log(e) + g^3*i)*a^3*b^2*c*d^4)*B^2*x + 6*(4*B^2*b^5*d^5*g^3*
i*x^5 + 20*B^2*a^3*b^2*c*d^4*g^3*i*x + 5*(b^5*c*d^4*g^3*i + 3*a*b^4*d^5*g^3
*i)*B^2*x^4 + 20*(a*b^4*c*d^4*g^3*i + a^2*b^3*d^5*g^3*i)*B^2*x^3 + 10*(3*a^
2*b^3*c*d^4*g^3*i + a^3*b^2*d^5*g^3*i)*B^2*x^2 + (5*a^4*b*c*d^4*g^3*i - a^5
*d^5*g^3*i)*B^2)*log(b*x + a))*log(d*x + c))/(b^2*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a\,g+b\,g\,x\right)^3\,\left(c\,i+d\,i\,x\right)\,{\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)
```

```
[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

3.56 $\int (ag+bgx)^2(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx$

Optimal. Leaf size=450

$$\frac{Bg^2i(bc-ad)^4\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(2B\log\left(\frac{e(a+bx)}{c+dx}\right)+2A+3B\right)}{12b^2d^3}+\frac{Bg^2i(a+bx)(bc-ad)^3\left(2B\log\left(\frac{e(a+bx)}{c+dx}\right)+2A+B\right)}{12b^2d^2}-\cdots$$

```
[Out] -1/3*B^2*(-a*d+b*c)^3*g^2*i*x/b/d^2+1/12*B^2*(-a*d+b*c)^2*g^2*i*(d*x+c)^2/d
^3-1/12*B*(-a*d+b*c)^2*g^2*i*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2/d-1/
6*B*(-a*d+b*c)*g^2*i*(b*x+a)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2+1/12*(-a*d+b
*c)*g^2*i*(b*x+a)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^2+1/4*g^2*i*(b*x+a)^3*(
d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b+1/12*B*(-a*d+b*c)^3*g^2*i*(b*x+a)*(2
*A+B+2*B*ln(e*(b*x+a)/(d*x+c)))/b^2/d^2+1/12*B*(-a*d+b*c)^4*g^2*i*ln((-a*d+
b*c)/b/(d*x+c))*(2*A+3*B+2*B*ln(e*(b*x+a)/(d*x+c)))/b^2/d^3+1/6*B^2*(-a*d+b
*c)^4*g^2*i*ln(d*x+c)/b^2/d^3+1/6*B^2*(-a*d+b*c)^4*g^2*i*polylog(2,d*(b*x+a
)/b/(d*x+c))/b^2/d^3
```

Rubi [A] time = 1.49, antiderivative size = 537, normalized size of antiderivative = 1.19, number of steps used = 46, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^2i(bc-ad)^4\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{6b^2d^3}-\frac{Bg^2i(bc-ad)^4\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{6b^2d^3}-\frac{Bg^2i(a+bx)^2(bc-ad)^2\left(\cdots\right.}{12b^2d\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] (A*B*(b*c - a*d)^3*g^2*i*x)/(6*b*d^2) - (B^2*(b*c - a*d)^3*g^2*i*x)/(12*b*d
^2) + (B^2*(b*c - a*d)^2*g^2*i*(a + b*x)^2)/(12*b^2*d) + (B^2*(b*c - a*d)^3
*g^2*i*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(6*b^2*d^2) - (B*(b*c - a*d)
^2*g^2*i*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(12*b^2*d) - (B*
(b*c - a*d)*g^2*i*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(6*b^2)
 + ((b*c - a*d)*g^2*i*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(
3*b^2) + (d*g^2*i*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(4*b^
2) - (B^2*(b*c - a*d)^4*g^2*i*Log[c + d*x])/(12*b^2*d^3) + (B^2*(b*c - a*d)
^4*g^2*i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(6*b^2*d^3) - (B*(
b*c - a*d)^4*g^2*i*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(6*b^
2*d^3) - (B^2*(b*c - a*d)^4*g^2*i*Log[c + d*x]^2)/(12*b^2*d^3) + (B^2*(b*c
- a*d)^4*g^2*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(6*b^2*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
```

```
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
```

```
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (56c+56dx)(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx = \int\left(\frac{56(bc-ad)(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b}\right.$$

$$= \frac{(56(bc-ad))\int (ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 d}{b}$$

$$= \frac{56(bc-ad)g^2(a+bx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^2} + \frac{14}{}$$

$$= \frac{56(bc-ad)g^2(a+bx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^2} + \frac{14}{}$$

$$= \frac{56(bc-ad)g^2(a+bx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^2} + \frac{14}{}$$

$$= \frac{56(bc-ad)g^2(a+bx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^2} + \frac{14}{}$$

$$= \frac{28AB(bc-ad)^3g^2x}{3bd^2} - \frac{14B(bc-ad)^2g^2(a+bx)^2\left(A\right.}{3b^2d}$$

$$= \frac{28AB(bc-ad)^3g^2x}{3bd^2} + \frac{28B^2(bc-ad)^3g^2(a+bx)\log}{3b^2d^2}$$

$$= \frac{28AB(bc-ad)^3g^2x}{3bd^2} + \frac{28B^2(bc-ad)^3g^2(a+bx)\log}{3b^2d^2}$$

$$= \frac{28AB(bc-ad)^3g^2x}{3bd^2} - \frac{14B^2(bc-ad)^3g^2x}{3bd^2} + \frac{14B^2(b}{}$$

$$= \frac{28AB(bc-ad)^3g^2x}{3bd^2} - \frac{14B^2(bc-ad)^3g^2x}{3bd^2} + \frac{14B^2(b}{}$$

$$= \frac{28AB(bc-ad)^3g^2x}{3bd^2} - \frac{14B^2(bc-ad)^3g^2x}{3bd^2} + \frac{14B^2(b}{}$$

$$= \frac{28AB(bc-ad)^3g^2x}{3bd^2} - \frac{14B^2(bc-ad)^3g^2x}{3bd^2} + \frac{14B^2(b}{}$$

Mathematica [A] time = 0.54, size = 680, normalized size = 1.51

$$g^2i\left(\frac{4B(bc-ad)^2\left(-d^2(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-2(bc-ad)^2\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2Abdx(bc-ad)+2Bd(a+bx)(bc-ad)\log\left(\frac{e(a+bx)}{c+dx}\right)+B(bc}{d^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]
)^2,x]
```

```
[Out] (g^2*i*(4*(b*c - a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 +
3*d*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + (4*B*(b*c - a*d)^2
*(2*A*b*d*(b*c - a*d)*x + 2*B*d*(b*c - a*d)*(a + b*x)*Log[(e*(a + b*x))/(c
+ d*x)] - d^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2*B*(b*c -
 a*d)^2*Log[c + d*x] - 2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])
*Log[c + d*x] + B*(b*c - a*d)*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + B*(b*
c - a*d)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*
x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^3 - (B*(b*c - a*d)*(6*A*b
*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d
*x)] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]
) + 2*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*c - a*d
)^3*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log
[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c -
 a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (-(b*c) + a*d)*Log[c + d
*x]) + 3*B*(b*c - a*d)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*
x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^3))/(12*b^2
)
```

fricas [F] time = 0.94, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(A^2b^2dg^2ix^3 + A^2a^2cg^2i + \left(A^2b^2c + 2\,A^2abd\right)g^2ix^2 + \left(2\,A^2abc + A^2a^2d\right)g^2ix + \left(B^2b^2dg^2ix^3 + B^2a^2cg^2i\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="fricas")
```

```
[Out] integral(A^2*b^2*d*g^2*i*x^3 + A^2*a^2*c*g^2*i + (A^2*b^2*c + 2*A^2*a*b*d)*
g^2*i*x^2 + (2*A^2*a*b*c + A^2*a^2*d)*g^2*i*x + (B^2*b^2*d*g^2*i*x^3 + B^2*
a^2*c*g^2*i + (B^2*b^2*c + 2*B^2*a*b*d)*g^2*i*x^2 + (2*B^2*a*b*c + B^2*a^2*
d)*g^2*i*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^2*d*g^2*i*x^3 + A*B*a
^2*c*g^2*i + (A*B*b^2*c + 2*A*B*a*b*d)*g^2*i*x^2 + (2*A*B*a*b*c + A*B*a^2*d
)*g^2*i*x)*log((b*e*x + a*e)/(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.09, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{2} \left(dix+ci\right) \left(B\ln\left(\frac{\left(bx+a\right)e}{dx+c}\right)+A\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 2.24, size = 2243, normalized size = 4.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="maxima")
```

```
[Out] 1/4*A^2*b^2*d*g^2*i*x^4 + 1/3*A^2*b^2*c*g^2*i*x^3 + 2/3*A^2*a*b*d*g^2*i*x^3
 + A^2*a*b*c*g^2*i*x^2 + 1/2*A^2*a^2*d*g^2*i*x^2 + 2*(x*log(b*e*x/(d*x + c)
 + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*A*B*a^2*c*g^2*i +
2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*lo
g(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a*b*c*g^2*i + 1/3*(2*x^3*log(b*e*
x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/
d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*b^
2*c*g^2*i + (x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^
2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a^2*d*g^2*i + 2/3*(2*x^
3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log
(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^
2))*A*B*a*b*d*g^2*i + 1/12*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*
a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*
x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A
*B*b^2*d*g^2*i + A^2*a^2*c*g^2*i*x - 1/12*(2*a^3*c*d^3*g^2*i + (2*g^2*i*log
(e) + g^2*i)*b^3*c^4 - 2*(4*g^2*i*log(e) + g^2*i)*a*b^2*c^3*d + (12*g^2*i*l
og(e) - g^2*i)*a^2*b*c^2*d^2)*B^2*log(d*x + c)/(b*d^3) - 1/6*(b^4*c^4*g^2*i
 - 4*a*b^3*c^3*d*g^2*i + 6*a^2*b^2*c^2*d^2*g^2*i - 4*a^3*b*c*d^3*g^2*i + a^
4*d^4*g^2*i)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d
*x + a*d)/(b*c - a*d)))*B^2/(b^2*d^3) + 1/12*(3*B^2*b^4*d^4*g^2*i*x^4*log(e
)^2 + 2*((2*g^2*i*log(e)^2 - g^2*i*log(e))*b^4*c*d^3 + (4*g^2*i*log(e)^2 +
g^2*i*log(e))*a*b^3*d^4)*B^2*x^3 - ((g^2*i*log(e) - g^2*i)*b^4*c^2*d^2 - 2*
(6*g^2*i*log(e)^2 - 2*g^2*i*log(e) - g^2*i)*a*b^3*c*d^3 - (6*g^2*i*log(e)^2
 + 5*g^2*i*log(e) + g^2*i)*a^2*b^2*d^4)*B^2*x^2 + ((2*g^2*i*log(e) - g^2*i)
*b^4*c^3*d - (8*g^2*i*log(e) - 5*g^2*i)*a*b^3*c^2*d^2 + (12*g^2*i*log(e)^2
+ 4*g^2*i*log(e) - 7*g^2*i)*a^2*b^2*c*d^3 + (2*g^2*i*log(e) + 3*g^2*i)*a^3*
b*d^4)*B^2*x + (3*B^2*b^4*d^4*g^2*i*x^4 + 12*B^2*a^2*b^2*c*d^3*g^2*i*x + 4*
(b^4*c*d^3*g^2*i + 2*a*b^3*d^4*g^2*i)*B^2*x^3 + 6*(2*a*b^3*c*d^3*g^2*i + a^
2*b^2*d^4*g^2*i)*B^2*x^2 + (4*a^3*b*c*d^3*g^2*i - a^4*d^4*g^2*i)*B^2)*log(b
*x + a)^2 + (3*B^2*b^4*d^4*g^2*i*x^4 + 12*B^2*a^2*b^2*c*d^3*g^2*i*x + 4*(b^
4*c*d^3*g^2*i + 2*a*b^3*d^4*g^2*i)*B^2*x^3 + 6*(2*a*b^3*c*d^3*g^2*i + a^2*b
^2*d^4*g^2*i)*B^2*x^2 + (b^4*c^4*g^2*i - 4*a*b^3*c^3*d*g^2*i + 6*a^2*b^2*c^
2*d^2*g^2*i)*B^2)*log(d*x + c)^2 + (6*B^2*b^4*d^4*g^2*i*x^4*log(e) + 2*((4*
g^2*i*log(e) - g^2*i)*b^4*c*d^3 + (8*g^2*i*log(e) + g^2*i)*a*b^3*d^4)*B^2*x
^3 - (b^4*c^2*d^2*g^2*i - 4*(6*g^2*i*log(e) - g^2*i)*a*b^3*c*d^3 - (12*g^2*
i*log(e) + 5*g^2*i)*a^2*b^2*d^4)*B^2*x^2 + 2*(b^4*c^3*d*g^2*i - 4*a*b^3*c^2
*d^2*g^2*i + a^3*b*d^4*g^2*i + 2*(6*g^2*i*log(e) + g^2*i)*a^2*b^2*c*d^3)*B^
2*x + (2*a*b^3*c^3*d*g^2*i - 7*a^2*b^2*c^2*d^2*g^2*i + 2*(4*g^2*i*log(e) +
3*g^2*i)*a^3*b*c*d^3 - (2*g^2*i*log(e) + g^2*i)*a^4*d^4)*B^2)*log(b*x + a)
- (6*B^2*b^4*d^4*g^2*i*x^4*log(e) + 2*((4*g^2*i*log(e) - g^2*i)*b^4*c*d^3 +
 (8*g^2*i*log(e) + g^2*i)*a*b^3*d^4)*B^2*x^3 - (b^4*c^2*d^2*g^2*i - 4*(6*g^
2*i*log(e) - g^2*i)*a*b^3*c*d^3 - (12*g^2*i*log(e) + 5*g^2*i)*a^2*b^2*d^4)*
B^2*x^2 + 2*(b^4*c^3*d*g^2*i - 4*a*b^3*c^2*d^2*g^2*i + a^3*b*d^4*g^2*i + 2*
(6*g^2*i*log(e) + g^2*i)*a^2*b^2*c*d^3)*B^2*x + 2*(3*B^2*b^4*d^4*g^2*i*x^4
+ 12*B^2*a^2*b^2*c*d^3*g^2*i*x + 4*(b^4*c*d^3*g^2*i + 2*a*b^3*d^4*g^2*i)*B^
2*x^3 + 6*(2*a*b^3*c*d^3*g^2*i + a^2*b^2*d^4*g^2*i)*B^2*x^2 + (4*a^3*b*c*d^
3*g^2*i - a^4*d^4*g^2*i)*B^2)*log(b*x + a))*log(d*x + c))/(b^2*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a g + b g x\right)^2 \, (c i + d i x) \, \left(A + B \ln\left(\frac{e\,(a + b x)}{c + d x}\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)
```

```
[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

3.57 $\int (ag+bgx)(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx$

Optimal. Leaf size=343

$$-\frac{Bgi(bc-ad)^3\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A+B\right)}{3b^2d^2}-\frac{Bgi(a+bx)(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^2d}+\frac{gi(a+bx}{}$$

```
[Out] 1/3*B^2*(-a*d+b*c)^2*g*i*x/b/d-1/3*B*(-a*d+b*c)^2*g*i*(b*x+a)*(A+B*ln(e*(b*
x+a)/(d*x+c)))/b^2/d-1/3*B*(-a*d+b*c)*g*i*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+
c)))/b^2+1/6*(-a*d+b*c)*g*i*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^2+1/3
*g*i*(b*x+a)^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b-1/3*B*(-a*d+b*c)^3*g
*i*ln((-a*d+b*c)/b/(d*x+c))*(A+B+B*ln(e*(b*x+a)/(d*x+c)))/b^2/d^2-1/3*B^2*(
-a*d+b*c)^3*g*i*ln(d*x+c)/b^2/d^2-1/3*B^2*(-a*d+b*c)^3*g*i*polylog(2,d*(b*x
+a)/b/(d*x+c))/b^2/d^2
```

Rubi [B] time = 2.82, antiderivative size = 1214, normalized size of antiderivative = 3.54, number of steps used = 78, number of rules used = 14, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.368, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 72}

$$-\frac{B^2dgi\log^2(a+bx)a^3}{3b^2}+\frac{2Bdgi\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)a^3}{3b^2}+\frac{2B^2dgi\log(a+bx)\log\left(\frac{b(c+dx)}{bc-ad}\right)a^3}{3b^2}+\frac{2B^2c}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] (-2*A*b*B*(a^2/b^2 - c^2/d^2)*d*g*i*x)/3 + (B^2*(b*c - a*d)^2*g*i*x)/(3*b*d
) - (A*B*(b*c - a*d)*(b*c + a*d)*g*i*x)/(b*d) + (a^2*B^2*(b*c - a*d)*g*i*Lo
g[a + b*x])/(3*b^2) - (a^2*B^2*c*g*i*Log[a + b*x]^2)/b - (a^3*B^2*d*g*i*Log
[a + b*x]^2)/(3*b^2) + (a^2*B^2*(b*c + a*d)*g*i*Log[a + b*x]^2)/(2*b^2) - (
B^2*(b*c - a*d)*(b*c + a*d)*g*i*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(3*
b^2*d) - (B*(b*c - a*d)*g*i*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/3 + (
2*a^2*B*c*g*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/b + (2*a^3
*B*d*g*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^2) - (a^2*
B*(b*c + a*d)*g*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/b^2 +
a*c*g*i*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + ((b*c + a*d)*g*i*x^2*(A
+ B*Log[(e*(a + b*x))/(c + d*x)])^2)/2 + (b*d*g*i*x^3*(A + B*Log[(e*(a + b*
x))/(c + d*x)])^2)/3 - (B^2*c^2*(b*c - a*d)*g*i*Log[c + d*x])/(3*d^2) + (B^
2*(b*c - a*d)^2*(b*c + a*d)*g*i*Log[c + d*x])/(3*b^2*d^2) + (2*b*B^2*c^3*g*
i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*d^2) + (2*a*B^2*c^2*g*
i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/d - (B^2*c^2*(b*c + a*d)*
g*i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/d^2 - (2*b*B*c^3*g*i*(A
 + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(3*d^2) - (2*a*B*c^2*g*i*(
A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/d + (B*c^2*(b*c + a*d)*g*
i*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/d^2 - (b*B^2*c^3*g*i*L
og[c + d*x]^2)/(3*d^2) - (a*B^2*c^2*g*i*Log[c + d*x]^2)/d + (B^2*c^2*(b*c +
 a*d)*g*i*Log[c + d*x]^2)/(2*d^2) + (2*a^2*B^2*c*g*i*Log[a + b*x]*Log[(b*(c
 + d*x))/(b*c - a*d)])/b + (2*a^3*B^2*d*g*i*Log[a + b*x]*Log[(b*(c + d*x))/
(b*c - a*d)])/(3*b^2) - (a^2*B^2*(b*c + a*d)*g*i*Log[a + b*x]*Log[(b*(c + d
*x))/(b*c - a*d)])/b^2 + (2*a^2*B^2*c*g*i*PolyLog[2, -((d*(a + b*x))/(b*c -
 a*d))])/b + (2*a^3*B^2*d*g*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(3*
b^2) - (a^2*B^2*(b*c + a*d)*g*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/b
^2 + (2*b*B^2*c^3*g*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(3*d^2) + (2*a
*B^2*c^2*g*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/d - (B^2*c^2*(b*c + a*d
)*g*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/d^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
```

```
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (57c+57dx)(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx = \int \left(57acg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 + 57(bc+ad)gx\left(\right.\right.$$

$$= (57acg)\int \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx + (57bdg)\int x$$

$$= 57acgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 + \frac{57}{2}(bc+ad)gx^2\left(A\right.$$

$$= 57acgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 + \frac{57}{2}(bc+ad)gx^2\left(A\right.$$

$$= 57acgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 + \frac{57}{2}(bc+ad)gx^2\left(A\right.$$

$$= 57acgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 + \frac{57}{2}(bc+ad)gx^2\left(A\right.$$

$$= -\frac{19AB(bc-ad)(bc+ad)gx}{bd} - 19B(bc-ad)gx^2\left(A+B\right.$$

$$= -\frac{19AB(bc-ad)(bc+ad)gx}{bd} - \frac{19B^2(bc-ad)(bc+ad)g}{b^2 d}$$

$$= -\frac{19AB(bc-ad)(bc+ad)gx}{bd} - \frac{19B^2(bc-ad)(bc+ad)g}{b^2 d}$$

$$= \frac{19B^2(bc-ad)^2gx}{bd} - \frac{19AB(bc-ad)(bc+ad)gx}{bd} + \frac{19a^2}{}$$

$$= \frac{19B^2(bc-ad)^2gx}{bd} - \frac{19AB(bc-ad)(bc+ad)gx}{bd} + \frac{19a^2}{}$$

$$= \frac{19B^2(bc-ad)^2gx}{bd} - \frac{19AB(bc-ad)(bc+ad)gx}{bd} + \frac{19a^2}{}$$

$$= \frac{19B^2(bc-ad)^2gx}{bd} - \frac{19AB(bc-ad)(bc+ad)gx}{bd} + \frac{19a^2}{}$$

Mathematica [B] time = 0.73, size = 869, normalized size = 2.53

$$\frac{gi\left(2b^3B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(c+dx)c^3 - b^3B^2\left(\left(2\log\left(\frac{d(a+bx)}{ad-bc}\right)-\log(c+dx)\right)\log(c+dx)+2\text{Li}_2\left(\frac{b(c+dx)}{bc-ad}\right)\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^
2,x]
```

```
[Out] (g*i*(-6*A*b^2*B*c*d*(b*c - a*d)*x + 6*a*A*b*B*d^2*(-(b*c) + a*d)*x + 4*A*b
*B*d*(b*c - a*d)*(b*c + a*d)*x - 6*b*B^2*c*d*(b*c - a*d)*(a + b*x)*Log[(e*(
```

```
a + b*x))/(c + d*x)] + 6*a*B^2*d^2*(-(b*c) + a*d)*(a + b*x)*Log[(e*(a + b*x
))/(c + d*x)] + 4*B^2*d*(b*c - a*d)*(b*c + a*d)*(a + b*x)*Log[(e*(a + b*x))
/(c + d*x)] - 2*b^2*B*d^2*(b*c - a*d)*x^2*(A + B*Log[(e*(a + b*x))/(c + d*x
)]) + 6*a^2*b*B*c*d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2
*a^3*B*d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*a*b^2*c*d^
2*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 3*b^2*d^2*(b*c + a*d)*x^2*(A +
 B*Log[(e*(a + b*x))/(c + d*x)])^2 + 2*b^3*d^3*x^3*(A + B*Log[(e*(a + b*x))
/(c + d*x)])^2 + 6*b*B^2*c*(b*c - a*d)^2*Log[c + d*x] + 6*a*B^2*d*(b*c - a*
d)^2*Log[c + d*x] - 4*B^2*(b*c - a*d)^2*(b*c + a*d)*Log[c + d*x] + 2*b^3*B*
c^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 6*a*b^2*B*c^2*d*(A
+ B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 2*B^2*(b*c - a*d)*(a^2*d^2
*Log[a + b*x] - b*(d*(-(b*c) + a*d)*x + b*c^2*Log[c + d*x])) - 3*a^2*b*B^2*
c*d^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*P
olyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + a^3*B^2*d^3*(Log[a + b*x]*(Log[a
 + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-
(b*c) + a*d)]) - b^3*B^2*c^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c
+ d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 3*a*b^2*B
^2*c^2*d*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x]
 + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(6*b^2*d^2)
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2bdgix^2 + A^2acgi + \left(A^2bc + A^2ad\right)gix + \left(B^2bdgix^2 + B^2acgi + \left(B^2bc + B^2ad\right)gix\right)\log\left(\frac{bex+ae}{dx+c}\right)^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorit
hm="fricas")
```

```
[Out] integral(A^2*b*d*g*i*x^2 + A^2*a*c*g*i + (A^2*b*c + A^2*a*d)*g*i*x + (B^2*b
*d*g*i*x^2 + B^2*a*c*g*i + (B^2*b*c + B^2*a*d)*g*i*x)*log((b*e*x + a*e)/(d*
x + c))^2 + 2*(A*B*b*d*g*i*x^2 + A*B*a*c*g*i + (A*B*b*c + A*B*a*d)*g*i*x)*l
og((b*e*x + a*e)/(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.82, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)\left(dix+ci\right)\left(B\ln\left(\frac{(bx+a)\,e}{dx+c}\right)+A\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 2.17, size = 1252, normalized size = 3.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorit
hm="maxima")
```

```
[Out] 1/3*A^2*b*d*g*i*x^3 + 1/2*A^2*b*c*g*i*x^2 + 1/2*A^2*a*d*g*i*x^2 + 2*(x*log(
b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*A*B
*a*c*g*i + (x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2
 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*b*c*g*i + (x^2*log(b*e*x
/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 -
 (b*c - a*d)*x/(b*d))*A*B*a*d*g*i + 1/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d
*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*
b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*b*d*g*i + A^2*a*c*g*i*
x + 1/3*(b^2*c^3*g*i*log(e) - a^2*c*d^2*g*i - (3*g*i*log(e) - g*i)*a*b*c^2*
d)*B^2*log(d*x + c)/(b*d^2) + 1/3*(b^3*c^3*g*i - 3*a*b^2*c^2*d*g*i + 3*a^2*
b*c*d^2*g*i - a^3*d^3*g*i)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1)
 + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^2*d^2) + 1/6*(2*B^2*b^3*d^3*g*
i*x^3*log(e)^2 + ((3*g*i*log(e)^2 - 2*g*i*log(e))*b^3*c*d^2 + (3*g*i*log(e)
^2 + 2*g*i*log(e))*a*b^2*d^3)*B^2*x^2 - 2*((g*i*log(e) - g*i)*b^3*c^2*d - (
3*g*i*log(e)^2 - 2*g*i)*a*b^2*c*d^2 - (g*i*log(e) + g*i)*a^2*b*d^3)*B^2*x +
 (2*B^2*b^3*d^3*g*i*x^3 + 6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c*d^2*g*i + a*b^
2*d^3*g*i)*B^2*x^2 + (3*a^2*b*c*d^2*g*i - a^3*d^3*g*i)*B^2)*log(b*x + a)^2
+ (2*B^2*b^3*d^3*g*i*x^3 + 6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c*d^2*g*i + a*b
^2*d^3*g*i)*B^2*x^2 - (b^3*c^3*g*i - 3*a*b^2*c^2*d*g*i)*B^2)*log(d*x + c)^2
 + 2*(2*B^2*b^3*d^3*g*i*x^3*log(e) + ((3*g*i*log(e) - g*i)*b^3*c*d^2 + (3*g
*i*log(e) + g*i)*a*b^2*d^3)*B^2*x^2 + (6*a*b^2*c*d^2*g*i*log(e) - b^3*c^2*d
*g*i + a^2*b*d^3*g*i)*B^2*x - (a^3*d^3*g*i*log(e) + a*b^2*c^2*d*g*i - (3*g*
i*log(e) + g*i)*a^2*b*c*d^2)*B^2)*log(b*x + a) - 2*(2*B^2*b^3*d^3*g*i*x^3*l
og(e) + ((3*g*i*log(e) - g*i)*b^3*c*d^2 + (3*g*i*log(e) + g*i)*a*b^2*d^3)*B
^2*x^2 + (6*a*b^2*c*d^2*g*i*log(e) - b^3*c^2*d*g*i + a^2*b*d^3*g*i)*B^2*x +
 (2*B^2*b^3*d^3*g*i*x^3 + 6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c*d^2*g*i + a*b^
2*d^3*g*i)*B^2*x^2 + (3*a^2*b*c*d^2*g*i - a^3*d^3*g*i)*B^2)*log(b*x + a))*l
og(d*x + c))/(b^2*d^2)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a g + b g x\right) (c i + d i x) \left(A + B \ln\left(\frac{e (a + b x)}{c + d x}\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)
```

```
[Out] int((a*g + b*g*x)*(c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

3.58 $\int (ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx$

Optimal. Leaf size=203

$$\frac{Bi(bc-ad)^2\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2d}-\frac{Bi(a+bx)(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2}+\frac{i(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2d}$$

```
[Out] -B*(-a*d+b*c)*i*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2+1/2*i*(d*x+c)^2*(A+
B*ln(e*(b*x+a)/(d*x+c)))^2/d+B^2*(-a*d+b*c)^2*i*ln(d*x+c)/b^2/d+B*(-a*d+b*c
)^2*i*(A+B*ln(e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^2/d-B^2*(-a*d
+b*c)^2*i*polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/d
```

Rubi [A] time = 0.43, antiderivative size = 283, normalized size of antiderivative = 1.39, number of steps used = 16, number of rules used = 12, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{B^2i(bc-ad)^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2d}-\frac{Bi(bc-ad)^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2d}+\frac{i(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] -((A*B*(b*c - a*d)*i*x)/b) + (B^2*(b*c - a*d)^2*i*Log[a + b*x]^2)/(2*b^2*d)
 - (B^2*(b*c - a*d)*i*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/b^2 - (B*(b*c
 - a*d)^2*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^2*d) + (i
*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*d) + (B^2*(b*c - a*
d)^2*i*Log[c + d*x])/(b^2*d) - (B^2*(b*c - a*d)^2*i*Log[a + b*x]*Log[(b*(c
+ d*x))/(b*c - a*d)])/(b^2*d) - (B^2*(b*c - a*d)^2*i*PolyLog[2, -((d*(a + b
*x))/(b*c - a*d))])/(b^2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (58c+58dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2dx = \frac{29(c+dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d} - \frac{B\int \frac{3364(bc-ad)(c+dx)\left(A+B\log\ldots\right.}{a+bx}}{58d}$$

$$= \frac{29(c+dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d} - \frac{(58B(bc-ad))\int \frac{(c+dx)\left(A\ldots\right.}{}}{d}$$

$$= \frac{29(c+dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d} - \frac{(58B(bc-ad))\int\left(\frac{d\left(A+B\log\ldots\right.}{}\right.}{}$$

$$= \frac{29(c+dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d} - \frac{(58B(bc-ad))\int\left(A+B\ldots\right.}{b}$$

$$= -\frac{58AB(bc-ad)x}{b} - \frac{58B(bc-ad)^2\log(a+bx)\left(A+B\log\left(\frac{e(a\ldots}{c\ldots}\right.\right.}{b^2d}$$

$$= -\frac{58AB(bc-ad)x}{b} - \frac{58B^2(bc-ad)(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2} - \frac{58B\ldots}{}$$

$$= -\frac{58AB(bc-ad)x}{b} - \frac{58B^2(bc-ad)(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2} - \frac{58B\ldots}{}$$

$$= -\frac{58AB(bc-ad)x}{b} - \frac{58B^2(bc-ad)(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2} - \frac{58B\ldots}{}$$

$$= -\frac{58AB(bc-ad)x}{b} - \frac{58B^2(bc-ad)(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2} - \frac{58B\ldots}{}$$

$$= -\frac{58AB(bc-ad)x}{b} + \frac{29B^2(bc-ad)^2\log^2(a+bx)}{b^2d} - \frac{58B^2(bc-\ldots}{}$$

$$= -\frac{58AB(bc-ad)x}{b} + \frac{29B^2(bc-ad)^2\log^2(a+bx)}{b^2d} - \frac{58B^2(bc-\ldots}{}$$

Mathematica [A] time = 0.20, size = 205, normalized size = 1.01

$$\frac{i\left((c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2 - \frac{B(bc-ad)\left(2(bc-ad)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+B\log\left(\frac{b(c+dx)}{bc-ad}\right)+A\right)+2\left(Bd(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)+\log(\ldots\right.\right.}{b^2}\right.}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] (i*((c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (B*(b*c - a*d)*((-
(b*B*c) + a*B*d)*Log[a + b*x]^2 + 2*(A*b*d*x + B*d*(a + b*x)*Log[(e*(a + b*
x))/(c + d*x)] + (-(b*B*c) + a*B*d)*Log[c + d*x]) + 2*(b*c - a*d)*Log[a + b
*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)] + B*Log[(b*(c + d*x))/(b*c - a*d)])
 + 2*B*(b*c - a*d)*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))/b^2))/(2*d)
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2dix + A^2ci + \left(B^2dix + B^2ci\right)\log\left(\frac{bex+ae}{dx+c}\right)^2 + 2\left(ABdix + ABci\right)\log\left(\frac{bex+ae}{dx+c}\right), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas")
```

```
[Out] integral(A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log((b*e*x + a*e)/(d*x
 + c))^2 + 2*(A*B*d*i*x + A*B*c*i)*log((b*e*x + a*e)/(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.58, size = 0, normalized size = 0.00

$$\int (dix+ci)\left(B\ln\left(\frac{(bx+a)e}{dx+c}\right)+A\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 1.97, size = 633, normalized size = 3.12

$$\frac{1}{2}A^2dix^2+2\left(x\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)+\frac{a\log(bx+a)}{b}-\frac{c\log(dx+c)}{d}\right)ABci+\left(x^2\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)-\frac{a^2\log}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima")
```

```
[Out] 1/2*A^2*d*i*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a
)/b - c*log(d*x + c)/d)*A*B*c*i + (x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c))
 - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*d
*i + A^2*c*i*x - ((i*log(e) - i)*b*c^2 + a*c*d*i)*B^2*log(d*x + c)/(b*d) -
(b^2*c^2*i - 2*a*b*c*d*i + a^2*d^2*i)*(log(b*x + a)*log((b*d*x + a*d)/(b*c
- a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^2*d) + 1/2*(B^2*b^2
*d^2*i*x^2*log(e)^2 + 2*(a*b*d^2*i*log(e) + (i*log(e)^2 - i*log(e))*b^2*c*d
)*B^2*x + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + (2*a*b*c*d*i - a^2*d^2*i
)*B^2)*log(b*x + a)^2 + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + B^2*b^2*c^
2*i)*log(d*x + c)^2 + 2*(B^2*b^2*d^2*i*x^2*log(e) + ((2*i*log(e) - i)*b^2*c
*d + a*b*d^2*i)*B^2*x + ((2*i*log(e) - i)*a*b*c*d - (i*log(e) - i)*a^2*d^2)
*B^2)*log(b*x + a) - 2*(B^2*b^2*d^2*i*x^2*log(e) + ((2*i*log(e) - i)*b^2*c*
d + a*b*d^2*i)*B^2*x + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + (2*a*b*c*d*
i - a^2*d^2*i)*B^2)*log(b*x + a))*log(d*x + c))/(b^2*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,i+d\,i\,x)\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)^2 \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)
```

```
[Out] int((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

3.59 $\int \frac{(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ag+bgx}\,dx$

Optimal. Leaf size=286

$$\frac{2Bi(bc-ad)\mathrm{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g}+\frac{2Bi(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g}+\frac{di(a+bx)\left(B\log\right.}{b}$$

```
[Out] 2*B*(-a*d+b*c)*i*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2/g
+d*i*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^2/g-(-a*d+b*c)*i*(A+B*ln(e*(b*
x+a)/(d*x+c)))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^2/g+2*B^2*(-a*d+b*c)*i*polylog
(2,d*(b*x+a)/b/(d*x+c))/b^2/g+2*B*(-a*d+b*c)*i*(A+B*ln(e*(b*x+a)/(d*x+c)))*
polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/g+2*B^2*(-a*d+b*c)*i*polylog(3,b*(d*x+c)
/d/(b*x+a))/b^2/g
```

Rubi [B] time = 2.94, antiderivative size = 644, normalized size of antiderivative = 2.25, number of steps used = 39, number of rules used = 19, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.475, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{2ABi(bc-ad)\mathrm{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2g}+\frac{2B^2i(bc-ad)\mathrm{PolyLog}\left(2,\frac{bc-ad}{d(a+bx)}+1\right)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g}+\frac{2aB^2di\mathrm{PolyLog}\left(2,-\right.}{b^2g}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x),x]
```

```
[Out] -((a*B^2*d*i*Log[a + b*x]^2)/(b^2*g)) - (A*B*(b*c - a*d)*i*Log[a + b*x]^2)/
(b^2*g) - (B^2*(b*c - a*d)*i*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[(e*(a +
b*x))/(c + d*x)]^2)/(b^2*g) - (B^2*(b*c - a*d)*i*Log[a + b*x]*Log[(e*(a + b
*x))/(c + d*x)]^2)/(b^2*g) + (2*a*B*d*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(b^2*g) + (d*i*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b
*g) + ((b*c - a*d)*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(
b^2*g) + (2*B^2*c*i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b*g) -
 (2*B*c*i*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(b*g) - (B^2*c
*i*Log[c + d*x]^2)/(b*g) + (2*a*B^2*d*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c
 - a*d)])/(b^2*g) + (2*A*B*(b*c - a*d)*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*
c - a*d)])/(b^2*g) + (2*a*B^2*d*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])
/(b^2*g) + (2*A*B*(b*c - a*d)*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(
b^2*g) + (2*B^2*c*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b*g) + (2*B^2*(
b*c - a*d)*i*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a
+ b*x))])/(b^2*g) + (2*B^2*(b*c - a*d)*i*PolyLog[3, 1 + (b*c - a*d)/(d*(a +
 b*x))])/(b^2*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
```

```
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
```

```
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(59c+59dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ag+bgx}\,dx=\int\left(\frac{59d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{bg}+\frac{59(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right.}{bg(a+bx)}\right.$$

$$=\frac{(59d)\int\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx}{bg}+\frac{(59(bc-ad))\int\frac{\left(A+B\log\left(\frac{e(a+bx}{c+dx}\right.\right.}{a+bx}}{bg}$$

$$=\frac{59dx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{bg}+\frac{59(bc-ad)\log(a+bx)\left(A+B\log\right.}{b^2g}$$

$$=\frac{59dx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{bg}+\frac{59(bc-ad)\log(a+bx)\left(A+B\log\right.}{b^2g}$$

$$=\frac{59dx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{bg}+\frac{59(bc-ad)\log(a+bx)\left(A+B\log\right.}{b^2g}$$

$$=\frac{59dx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{bg}+\frac{59(bc-ad)\log(a+bx)\left(A+B\log\right.}{b^2g}$$

$$=\frac{118aBd\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g}+\frac{59dx\left(A+B\log\left(\frac{e(a}{c+}\right.\right.}{bg}$$

$$=\frac{118aBd\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g}+\frac{59dx\left(A+B\log\left(\frac{e(a}{c+}\right.\right.}{bg}$$

$$=-\frac{59B^2(bc-ad)\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g}+\frac{118aBd\log(a+bx)\left(\right.}{b^2}$$

$$=-\frac{59B^2(bc-ad)\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g}-\frac{59B^2(bc-ad)\log(}{}$$

$$=-\frac{59AB(bc-ad)\log^2(a+bx)}{b^2g}-\frac{59B^2(bc-ad)\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2}{b^2g}$$

$$=-\frac{59aB^2d\log^2(a+bx)}{b^2g}-\frac{59AB(bc-ad)\log^2(a+bx)}{b^2g}-\frac{59B^2(bc}{}$$

$$=-\frac{59aB^2d\log^2(a+bx)}{b^2g}-\frac{59AB(bc-ad)\log^2(a+bx)}{b^2g}-\frac{59B^2(bc}{}$$

Mathematica [B] time = 1.30, size = 987, normalized size = 3.45

$$\frac{i\left(3bdxA^2+3(bc-ad)\log(a+bx)A^2-3B\left(ad\log^2\left(\frac{a}{b}+x\right)-2ad(\log(a+bx)+1)\log\left(\frac{a}{b}+x\right)+2\left(-bc+ad\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g
*x),x]
```

```
[Out] (i*(3*A^2*b*d*x + 3*A^2*(b*c - a*d)*Log[a + b*x] - 3*A*B*(a*d*Log[a/b + x]^
2 - 2*a*d*Log[a/b + x]*(1 + Log[a + b*x]) + 2*(-(b*c) + a*d + Log[c/d + x]*
(b*c + a*d*Log[a + b*x] - a*d*Log[(d*(a + b*x))/(-(b*c) + a*d)]) + (-(b*d*x
) + a*d*Log[a + b*x])*Log[(e*(a + b*x))/(c + d*x)]) - 2*a*d*PolyLog[2, (b*(
c + d*x))/(b*c - a*d)]) + 3*A*b*B*c*(Log[a/b + x]^2 - 2*Log[a + b*x]*(Log[a
/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x)]) - 2*(Log[c/d + x]*Lo
g[(d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) -
 B^2*(a*d*Log[a/b + x]^3 - 3*d*(2*b*x - 2*(a + b*x)*Log[a/b + x] + (a + b*x
)*Log[a/b + x]^2) - 3*b*(2*d*x - 2*(c + d*x)*Log[c/d + x] + (c + d*x)*Log[c
/d + x]^2) - 3*d*(b*x - a*Log[a + b*x])*(-Log[a/b + x] + Log[c/d + x] + Log
[(e*(a + b*x))/(c + d*x)])^2 + 6*(a*d + 2*b*d*x - b*d*x*Log[c/d + x] - b*c*
Log[c + d*x] + Log[a/b + x]*(-(d*(a + b*x)) + d*(a + b*x)*Log[c/d + x] + (b
*c - a*d)*Log[(b*(c + d*x))/(b*c - a*d)]) + (b*c - a*d)*PolyLog[2, (d*(a +
b*x))/(-(b*c) + a*d)]) - 3*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))
/(c + d*x)])*(-2*b*c + 2*a*d - 2*d*(a + b*x)*Log[a/b + x] + a*d*Log[a/b + x
]^2 + 2*Log[c/d + x]*(b*(c + d*x) - a*d*Log[(d*(a + b*x))/(-(b*c) + a*d)])
- 2*a*d*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) - 3*a*d*(Log[a/b + x]^2*(Log
[c/d + x] - Log[(b*(c + d*x))/(b*c - a*d)]) - 2*Log[a/b + x]*PolyLog[2, (d*
(a + b*x))/(-(b*c) + a*d)] + 2*PolyLog[3, (d*(a + b*x))/(-(b*c) + a*d)]) +
3*a*d*(Log[c/d + x]^2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*Log[c/d + x]*Po
lyLog[2, (b*(c + d*x))/(b*c - a*d)] - 2*PolyLog[3, (b*(c + d*x))/(b*c - a*d
)])) - 3*b*B^2*c*(Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(e*(a + b*x))/(c +
d*x)]^2 - 2*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b
*x))] - 2*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))])))/(3*b^2*g)
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2dix + A^2ci + \left(B^2dix + B^2ci\right)\log\left(\frac{bex+ae}{dx+c}\right)^2 + 2\left(ABdix + ABci\right)\log\left(\frac{bex+ae}{dx+c}\right)}{bgx + ag}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algorit
hm="fricas")
```

```
[Out] integral((A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log((b*e*x + a*e)/(d*
x + c))^2 + 2*(A*B*d*i*x + A*B*c*i)*log((b*e*x + a*e)/(d*x + c)))/(b*g*x +
a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.87, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)\left(B\ln\left(\frac{(bx+a)e}{dx+c}\right) + A\right)^2}{bgx + ag}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g),x)
```

```
[Out] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2di\left(\frac{x}{bg} - \frac{a\log(bx+a)}{b^2g}\right) + \frac{A^2ci\log\left(bgx+ag\right)}{bg} + \frac{\left(B^2bdix + (bci-adi)B^2\log(bx+a)\right)\log(dx+c)^2}{b^2g} - \int -\frac{B^2i}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algorit
hm="maxima")
```

```
[Out] A^2*d*i*(x/(b*g) - a*log(b*x + a)/(b^2*g)) + A^2*c*i*log(b*g*x + a*g)/(b*g)
 + (B^2*b*d*i*x + (b*c*i - a*d*i)*B^2*log(b*x + a))*log(d*x + c)^2/(b^2*g)
- integrate(-(B^2*b^2*c^2*i*log(e)^2 + 2*A*B*b^2*c^2*i*log(e) + (B^2*b^2*d^
2*i*log(e)^2 + 2*A*B*b^2*d^2*i*log(e))*x^2 + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2
*c*d*i*x + B^2*b^2*c^2*i)*log(b*x + a)^2 + 2*(B^2*b^2*c*d*i*log(e)^2 + 2*A*
B*b^2*c*d*i*log(e))*x + 2*(B^2*b^2*c^2*i*log(e) + A*B*b^2*c^2*i + (B^2*b^2*
d^2*i*log(e) + A*B*b^2*d^2*i)*x^2 + 2*(B^2*b^2*c*d*i*log(e) + A*B*b^2*c*d*i
)*x)*log(b*x + a) - 2*(B^2*b^2*c^2*i*log(e) + A*B*b^2*c^2*i + ((i*log(e) +
i)*B^2*b^2*d^2 + A*B*b^2*d^2*i)*x^2 + (2*A*B*b^2*c*d*i + (2*b^2*c*d*i*log(e
) + a*b*d^2*i)*B^2)*x + (B^2*b^2*d^2*i*x^2 + (3*b^2*c*d*i - a*b*d^2*i)*B^2*
x + (b^2*c^2*i + a*b*c*d*i - a^2*d^2*i)*B^2)*log(b*x + a))*log(d*x + c))/(b
^3*d*g*x^2 + a*b^2*c*g + (b^3*c*g + a*b^2*d*g)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i + d\,i\,x)\,\left(A + B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)^2}{a\,g + b\,g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x),x)
```

```
[Out] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x), x
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{i\left(\int \frac{A^2c}{a+bx}\,dx + \int \frac{A^2dx}{a+bx}\,dx + \int \frac{B^2c\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)^2}{a+bx}\,dx + \int \frac{2ABc\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{a+bx}\,dx + \int \frac{B^2dx\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)^2}{a+bx}\,dx + \int \frac{2ABd}{}\right.}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g),x)
```

```
[Out] i*(Integral(A**2*c/(a + b*x), x) + Integral(A**2*d*x/(a + b*x), x) + Integr
al(B**2*c*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a + b*x), x) + Integral(
2*A*B*c*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x) + Integral(B**2*
d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a + b*x), x) + Integral(2*A*B*
d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x))/g
```

3.60 $\int \frac{(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=241

$$\frac{2Bdi\mathrm{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g^2}-\frac{di\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{b^2g^2}-\frac{2Bi(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+\right.}{bg^2(a+bx)}$$

```
[Out] -2*B^2*i*(d*x+c)/b/g^2/(b*x+a)-2*B*i*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b/
g^2/(b*x+a)-i*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b/g^2/(b*x+a)-d*i*(A+B*
ln(e*(b*x+a)/(d*x+c)))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^2/g^2+2*B*d*i*(A+B*ln(
e*(b*x+a)/(d*x+c)))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/g^2+2*B^2*d*i*polylo
g(3,b*(d*x+c)/d/(b*x+a))/b^2/g^2
```

Rubi [B] time = 3.03, antiderivative size = 705, normalized size of antiderivative = 2.93, number of steps used = 43, number of rules used = 20, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{2ABdi\mathrm{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2g^2}+\frac{2B^2di\mathrm{PolyLog}\left(2,\frac{bc-ad}{d(a+bx)}+1\right)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g^2}-\frac{2B^2di\mathrm{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2g^2}-\frac{2B^2di\mathrm{P}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^2,
x]
```

```
[Out] (-2*B^2*(b*c - a*d)*i)/(b^2*g^2*(a + b*x)) - (2*B^2*d*i*Log[a + b*x])/(b^2*
g^2) - (A*B*d*i*Log[a + b*x]^2)/(b^2*g^2) + (B^2*d*i*Log[a + b*x]^2)/(b^2*g
^2) - (B^2*d*i*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[(e*(a + b*x))/(c + d*x
)]^2)/(b^2*g^2) - (B^2*d*i*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^
2*g^2) - (2*B*(b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^2*g^2*
(a + b*x)) - (2*B*d*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b
^2*g^2) - ((b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^2*g^2*(
a + b*x)) + (d*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^2*
g^2) + (2*B^2*d*i*Log[c + d*x])/(b^2*g^2) - (2*B^2*d*i*Log[-((d*(a + b*x))/
(b*c - a*d))]*Log[c + d*x])/(b^2*g^2) + (2*B*d*i*(A + B*Log[(e*(a + b*x))/(
c + d*x)])*Log[c + d*x])/(b^2*g^2) + (B^2*d*i*Log[c + d*x]^2)/(b^2*g^2) + (
2*A*B*d*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*g^2) - (2*B^2*d
*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*g^2) + (2*A*B*d*i*Poly
Log[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*g^2) - (2*B^2*d*i*PolyLog[2, -((
d*(a + b*x))/(b*c - a*d))])/(b^2*g^2) - (2*B^2*d*i*PolyLog[2, (b*(c + d*x))
/(b*c - a*d)])/(b^2*g^2) + (2*B^2*d*i*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[
2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^2*g^2) + (2*B^2*d*i*PolyLog[3, 1 + (b
*c - a*d)/(d*(a + b*x))])/(b^2*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(60c+60dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^2}\,dx = \int\left(\frac{60(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{bg^2(a+bx)^2}+\frac{60d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{bg^2(a+bx)}\right.$$

$$=\frac{(60d)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}\,dx}{bg^2}+\frac{(60(bc-ad))\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^2}\,dx}{bg^2}$$

$$=-\frac{60(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^2(a+bx)}+\frac{60d\log(a+bx)\left(A+B\log\left(\right.\right.}{b^2g^2}$$

$$=-\frac{60(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^2(a+bx)}+\frac{60d\log(a+bx)\left(A+B\log\left(\right.\right.}{b^2g^2}$$

$$=-\frac{60(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^2(a+bx)}+\frac{60d\log(a+bx)\left(A+B\log\left(\right.\right.}{b^2g^2}$$

$$=-\frac{60(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^2(a+bx)}+\frac{60d\log(a+bx)\left(A+B\log\left(\right.\right.}{b^2g^2}$$

$$=-\frac{120B(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^2(a+bx)}-\frac{120Bd\log(a+bx)\left(A+B\,\mathrm{lo}\right.}{b^2g^2}$$

$$=-\frac{120B(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^2(a+bx)}-\frac{120Bd\log(a+bx)\left(A+B\,\mathrm{lo}\right.}{b^2g^2}$$

$$=-\frac{60B^2d\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{b^2g^2}-\frac{120B(bc-ad)\left(A+B\log\left(\frac{e(a+b}{c+d}\right.\right.}{b^2g^2(a+bx)}$$

$$=-\frac{120B^2(bc-ad)}{b^2g^2(a+bx)}-\frac{120B^2d\log(a+bx)}{b^2g^2}-\frac{60B^2d\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2}{b^2g^2}$$

$$=-\frac{120B^2(bc-ad)}{b^2g^2(a+bx)}-\frac{120B^2d\log(a+bx)}{b^2g^2}-\frac{60ABd\log^2(a+bx)}{b^2g^2}-\frac{60}{}$$

$$=-\frac{120B^2(bc-ad)}{b^2g^2(a+bx)}-\frac{120B^2d\log(a+bx)}{b^2g^2}-\frac{60ABd\log^2(a+bx)}{b^2g^2}+\frac{60}{}$$

$$=-\frac{120B^2(bc-ad)}{b^2g^2(a+bx)}-\frac{120B^2d\log(a+bx)}{b^2g^2}-\frac{60ABd\log^2(a+bx)}{b^2g^2}+\frac{60}{}$$

Mathematica [B] time = 2.05, size = 1407, normalized size = 5.84

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g
*x)^2,x]
```

```
[Out] (i*((3*A^2*(-(b*c) + a*d))/(a + b*x) + 3*A^2*d*Log[a + b*x] - (6*A*b*B*c*(-
(d*(a + b*x)*Log[c/d + x]) + d*(a + b*x)*Log[(d*(a + b*x))/(-(b*c) + a*d)]
+ (b*c - a*d)*(1 + Log[(e*(a + b*x))/(c + d*x)])))/((b*c - a*d)*(a + b*x))
+ (3*b*B^2*c*(-2*b*c + 2*a*d - 2*d*(a + b*x)*Log[a + b*x] - 2*(b*c - a*d)*L
og[(e*(a + b*x))/(c + d*x)] - 2*d*(a + b*x)*Log[a + b*x]*Log[(e*(a + b*x))/
(c + d*x)] - (b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)]^2 + 2*d*(a + b*x)*Log
[c + d*x] - 2*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c
 + b*d*x)] + d*(a + b*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/
(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + d*(a + b*x)*(
Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(
b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b
*c - a*d)*(a + b*x)) + 3*A*B*d*(Log[a/b + x]^2 - 2*Log[a/b + x]*Log[a + b*x
] - 2*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*Log[a + b*x]*((a*d
)/(b*c - a*d) + Log[c/d + x] + Log[(e*(a + b*x))/(c + d*x)]) + 2*a*((a + b*
x)^(-1) + Log[(e*(a + b*x))/(c + d*x)]/(a + b*x) + (d*Log[c + d*x])/(-(b*c)
 + a*d)) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + (B^2*d*((b*c - a*d)*(
a + b*x)*Log[a/b + x]^3 + 3*a*(b*c - a*d)*(2 + 2*Log[a/b + x] + Log[a/b + x
]^2) + 3*(b*c - a*d)*(a + (a + b*x)*Log[a + b*x])*(-Log[a/b + x] + Log[c/d
+ x] + Log[(e*(a + b*x))/(c + d*x)])^2 + 3*a*(d*(a + b*x)*Log[a/b + x]^2 +
2*((-(b*c) + a*d)*Log[c/d + x] + d*(a + b*x)*(Log[a + b*x] - Log[c + d*x]))
 - 2*Log[a/b + x]*((b*c - a*d)*Log[c/d + x] + d*(a + b*x)*Log[(b*(c + d*x))
/(b*c - a*d)]) - 2*d*(a + b*x)*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) +
3*a*(Log[c/d + x]*(b*(c + d*x)*Log[c/d + x] - 2*d*(a + b*x)*Log[(d*(a + b*x
))/(-(b*c) + a*d)]) - 2*d*(a + b*x)*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])
- 3*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x)])*((b*c - a*
d)*(a + b*x)*Log[a/b + x]^2 + 2*a*(b*c - a*d)*(1 + Log[a/b + x]) + 2*a*(-(b
*c) + a*d)*Log[c/d + x] + 2*a*d*(a + b*x)*(Log[a + b*x] - Log[c + d*x]) - 2
*(b*c - a*d)*(a + b*x)*(Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Po
lyLog[2, (b*(c + d*x))/(b*c - a*d)])) - 3*(b*c - a*d)*(a + b*x)*(Log[a/b +
x]^2*(Log[c/d + x] - Log[(b*(c + d*x))/(b*c - a*d)]) - 2*Log[a/b + x]*PolyL
og[2, (d*(a + b*x))/(-(b*c) + a*d)] + 2*PolyLog[3, (d*(a + b*x))/(-(b*c) +
a*d)]) + 3*(b*c - a*d)*(a + b*x)*(Log[c/d + x]^2*Log[(d*(a + b*x))/(-(b*c)
+ a*d)] + 2*Log[c/d + x]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 2*PolyLog[
3, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(a + b*x))))/(3*b^2*g^2)
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2dix + A^2ci + \left(B^2dix + B^2ci\right)\log\left(\frac{bex+ae}{dx+c}\right)^2 + 2\,(ABdix + ABci)\log\left(\frac{bex+ae}{dx+c}\right)}{b^2g^2x^2 + 2\,abg^2x + a^2g^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, algor
ithm="fricas")
```

```
[Out] integral((A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log((b*e*x + a*e)/(d*
x + c))^2 + 2*(A*B*d*i*x + A*B*c*i)*log((b*e*x + a*e)/(d*x + c)))/(b^2*g^2*
x^2 + 2*a*b*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.70, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)\left(B\ln\left(\frac{(bx+a)e}{dx+c}\right)+A\right)^2}{\left(bgx+ag\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)
```

```
[Out] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2di\left(\frac{a}{b^3g^2x+ab^2g^2}+\frac{\log(bx+a)}{b^2g^2}\right)-2\,ABci\left(\frac{\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)}{b^2g^2x+abg^2}+\frac{1}{b^2g^2x+abg^2}+\frac{d\log(bx+a)}{\left(b^2c-abd\right)g^2}-\frac{d\log(dx+c}{\left(b^2c-abd\right)g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, algor
ithm="maxima")
```

```
[Out] A^2*d*i*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2)) - 2*A*B*c*i*(l
og(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^2*g^2*x + a*b*g^2) + 1/(b^2*g^2*x +
a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*log(d*x + c)/((b^2*c -
a*b*d)*g^2)) - A^2*c*i/(b^2*g^2*x + a*b*g^2) - ((b*c*i - a*d*i)*B^2 - (B^2*
b*d*i*x + B^2*a*d*i)*log(b*x + a))*log(d*x + c)^2/(b^3*g^2*x + a*b^2*g^2) -
 integrate(-(B^2*b^2*c^2*i*log(e)^2 + (B^2*b^2*d^2*i*log(e)^2 + 2*A*B*b^2*d
^2*i*log(e))*x^2 + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + B^2*b^2*c^2*i)*
log(b*x + a)^2 + 2*(B^2*b^2*c*d*i*log(e)^2 + A*B*b^2*c*d*i*log(e))*x + 2*(B
^2*b^2*c^2*i*log(e) + (B^2*b^2*d^2*i*log(e) + A*B*b^2*d^2*i)*x^2 + (2*B^2*b
^2*c*d*i*log(e) + A*B*b^2*c*d*i)*x)*log(b*x + a) - 2*((b^2*c^2*i*log(e) - a
*b*c*d*i + a^2*d^2*i)*B^2 + (B^2*b^2*d^2*i*log(e) + A*B*b^2*d^2*i)*x^2 + (A
*B*b^2*c*d*i + ((2*i*log(e) - i)*b^2*c*d + a*b*d^2*i)*B^2)*x + (2*B^2*b^2*d
^2*i*x^2 + 2*(b^2*c*d*i + a*b*d^2*i)*B^2*x + (b^2*c^2*i + a^2*d^2*i)*B^2)*l
og(b*x + a))*log(d*x + c))/(b^4*d*g^2*x^3 + a^2*b^2*c*g^2 + (b^4*c*g^2 + 2*
a*b^3*d*g^2)*x^2 + (2*a*b^3*c*g^2 + a^2*b^2*d*g^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)^2}{{\left(a\,g+b\,g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^2,
x)
```

```
[Out] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**2,x)
```

```
[Out] Timed out
```

3.61 $\int \frac{(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3} dx$

Optimal. Leaf size=141

$$-\frac{i(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2g^3(a+bx)^2(bc-ad)}-\frac{Bi(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^3(a+bx)^2(bc-ad)}-\frac{B^2i(c+dx)^2}{4g^3(a+bx)^2(bc-ad)}$$

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

Rubi [C] time = 1.94, antiderivative size = 639, normalized size of antiderivative = 4.53, number of steps used = 58, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{B^2d^2i\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2g^3(bc-ad)}-\frac{B^2d^2i\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{b^2g^3(bc-ad)}-\frac{Bd^2i\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^2g^3(bc-ad)}+\frac{Bd^2i\log(c}{}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^3,
x]
```

```
[Out] -(B^2*(b*c - a*d)*i)/(4*b^2*g^3*(a + b*x)^2) - (B^2*d*i)/(2*b^2*g^3*(a + b*
x)) - (B^2*d^2*i*Log[a + b*x])/(2*b^2*(b*c - a*d)*g^3) + (B^2*d^2*i*Log[a +
 b*x]^2)/(2*b^2*(b*c - a*d)*g^3) - (B*(b*c - a*d)*i*(A + B*Log[(e*(a + b*x)
)/(c + d*x)]))/(2*b^2*g^3*(a + b*x)^2) - (B*d*i*(A + B*Log[(e*(a + b*x))/(c
 + d*x)]))/(b^2*g^3*(a + b*x)) - (B*d^2*i*Log[a + b*x]*(A + B*Log[(e*(a + b
*x))/(c + d*x)]))/(b^2*(b*c - a*d)*g^3) - ((b*c - a*d)*i*(A + B*Log[(e*(a +
 b*x))/(c + d*x)])^2)/(2*b^2*g^3*(a + b*x)^2) - (d*i*(A + B*Log[(e*(a + b*x
))/(c + d*x)])^2)/(b^2*g^3*(a + b*x)) + (B^2*d^2*i*Log[c + d*x])/(2*b^2*(b*
c - a*d)*g^3) - (B^2*d^2*i*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/
(b^2*(b*c - a*d)*g^3) + (B*d^2*i*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c
 + d*x])/(b^2*(b*c - a*d)*g^3) + (B^2*d^2*i*Log[c + d*x]^2)/(2*b^2*(b*c - a
*d)*g^3) - (B^2*d^2*i*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*(b*
c - a*d)*g^3) - (B^2*d^2*i*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*(
b*c - a*d)*g^3) - (B^2*d^2*i*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^2*(b
*c - a*d)*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(61c+61dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3}dx = \int \left(\frac{61(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{bg^3(a+bx)^3} + \frac{61d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right.}{bg^3(a+bx)^2}\cdots\right.$$

$$= \frac{(61d)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^2}dx}{bg^3} + \frac{(61(bc-ad))\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^3}dx}{bg^3}\cdots$$

$$= -\frac{61(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2b^2g^3(a+bx)^2} - \frac{61d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^3(a+bx)}\cdots$$

$$= -\frac{61(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2b^2g^3(a+bx)^2} - \frac{61d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^3(a+bx)}\cdots$$

$$= -\frac{61(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2b^2g^3(a+bx)^2} - \frac{61d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^3(a+bx)}\cdots$$

$$= -\frac{61(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2b^2g^3(a+bx)^2} - \frac{61d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^3(a+bx)}\cdots$$

$$= -\frac{61B(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2b^2g^3(a+bx)^2} - \frac{61Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^3(a+bx)}\cdots$$

$$= -\frac{61B(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2b^2g^3(a+bx)^2} - \frac{61Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^3(a+bx)}\cdots$$

$$= -\frac{61B(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2b^2g^3(a+bx)^2} - \frac{61Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^2g^3(a+bx)}\cdots$$

$$= -\frac{61B^2(bc-ad)}{4b^2g^3(a+bx)^2} - \frac{61B^2d}{2b^2g^3(a+bx)} - \frac{61B^2d^2\log(a+bx)}{2b^2(bc-ad)g^3} - \frac{61B(bc\cdots}{}$$

$$= -\frac{61B^2(bc-ad)}{4b^2g^3(a+bx)^2} - \frac{61B^2d}{2b^2g^3(a+bx)} - \frac{61B^2d^2\log(a+bx)}{2b^2(bc-ad)g^3} - \frac{61B(bc\cdots}{}$$

$$= -\frac{61B^2(bc-ad)}{4b^2g^3(a+bx)^2} - \frac{61B^2d}{2b^2g^3(a+bx)} - \frac{61B^2d^2\log(a+bx)}{2b^2(bc-ad)g^3} + \frac{61B^2d^2\cdots}{2b^2\cdots}$$

$$= -\frac{61B^2(bc-ad)}{4b^2g^3(a+bx)^2} - \frac{61B^2d}{2b^2g^3(a+bx)} - \frac{61B^2d^2\log(a+bx)}{2b^2(bc-ad)g^3} + \frac{61B^2d^2\cdots}{2b^2\cdots}$$

Mathematica [C] time = 0.91, size = 765, normalized size = 5.43

$$-\frac{i\left(B\left(-4d^2(a+bx)^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+4d^2(a+bx)^2\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2(bc\cdots\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g
*x)^3,x]
```

```
[Out] -1/4*(i*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 4*d*(-(b*
c) + a*d)*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 4*B*d*(a + b*x
)*(2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*d*(a + b*x)*Log[a
 + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2*d*(a + b*x)*(A + B*Log[(e*
(a + b*x))/(c + d*x)])*Log[c + d*x] + 2*B*(b*c - a*d + d*(a + b*x)*Log[a +
b*x] - d*(a + b*x)*Log[c + d*x]) - B*d*(a + b*x)*(Log[a + b*x]*(Log[a + b*x
] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c)
+ a*d)]) + B*d*(a + b*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*
x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + B*(2*(b*c -
a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d*(-(b*c) + a*d)*(a + b*x)*
(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4*d^2*(a + b*x)^2*Log[a + b*x]*(A +
B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x)
)/(c + d*x)])*Log[c + d*x] - 4*B*d*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a
 + b*x] - d*(a + b*x)*Log[c + d*x]) + B*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)
*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x
]) + 2*B*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/
(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 2*B*d^2*(a +
b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] +
 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))))/(b^2*(b*c - a*d)*g^3*(a + b*x)
^2)
```

fricas [B] time = 0.85, size = 289, normalized size = 2.05

$$-\frac{2\left(\left(2A^2+2AB+B^2\right)b^2cd-\left(2A^2+2AB+B^2\right)abd^2\right)ix+2\left(B^2b^2d^2ix^2+2B^2b^2cdix+B^2b^2c^2i\right)\log\left(\frac{bex+ae}{dx+c}\right)^2-}{4\left(\left(b^5c-ab^4d\right)g^3x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, algor
ithm="fricas")
```

```
[Out] -1/4*(2*((2*A^2 + 2*A*B + B^2)*b^2*c*d - (2*A^2 + 2*A*B + B^2)*a*b*d^2)*i*x
 + 2*(B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + B^2*b^2*c^2*i)*log((b*e*x + a
*e)/(d*x + c))^2 + ((2*A^2 + 2*A*B + B^2)*b^2*c^2 - (2*A^2 + 2*A*B + B^2)*a
^2*d^2)*i + 2*((2*A*B + B^2)*b^2*d^2*i*x^2 + 2*(2*A*B + B^2)*b^2*c*d*i*x +
(2*A*B + B^2)*b^2*c^2*i)*log((b*e*x + a*e)/(d*x + c)))/((b^5*c - a*b^4*d)*g
^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3)
```

giac [A] time = 1.29, size = 185, normalized size = 1.31

$$-\frac{\left(2B^2ie^3\log\left(\frac{bxe+ae}{dx+c}\right)^2+4ABie^3\log\left(\frac{bxe+ae}{dx+c}\right)+2B^2ie^3\log\left(\frac{bxe+ae}{dx+c}\right)+2A^2ie^3+2ABie^3+B^2ie^3\right)(dx+c)^2\left(\frac{}{(bce-ad}\right.}{4(bxe+ae)^2g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, algor
ithm="giac")
```

```
[Out] -1/4*(2*B^2*i*e^3*log((b*x*e + a*e)/(d*x + c))^2 + 4*A*B*i*e^3*log((b*x*e +
 a*e)/(d*x + c)) + 2*B^2*i*e^3*log((b*x*e + a*e)/(d*x + c)) + 2*A^2*i*e^3 +
 2*A*B*i*e^3 + B^2*i*e^3)*(d*x + c)^2*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) -
a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^2*g^3)
```

maple [B] time = 0.05, size = 865, normalized size = 6.13

$$\frac{B^2ad\,e^2i\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{2(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^2g^3}-\frac{B^2bc\,e^2i\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{2(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^2g^3}+\frac{ABad\,e^2i\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^2g^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3,x)
```

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

maxima [B] time = 2.39, size = 1987, normalized size = 14.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, algor
ithm="maxima")
```

```
[Out] -1/2*(2*b*x + a)*B^2*d*i*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^4*g^3*x^
2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + 1/4*(2*((2*b*d*x - b*c + 3*a*d)/((b^4*c
- a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*
g^3) + 2*d^2*log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2
*log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3))*log(b*e*x/(d*x + c
) + a*e/(d*x + c)) - (b^2*c^2 - 8*a*b*c*d + 7*a^2*d^2 + 2*(b^2*d^2*x^2 + 2*
a*b*d^2*x + a^2*d^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^
2)*log(d*x + c)^2 - 6*(b^2*c*d - a*b*d^2)*x - 6*(b^2*d^2*x^2 + 2*a*b*d^2*x
+ a^2*d^2)*log(b*x + a) + 2*(3*b^2*d^2*x^2 + 6*a*b*d^2*x + 3*a^2*d^2 - 2*(b
^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a))*log(d*x + c))/(a^2*b^3*c^
2*g^3 - 2*a^3*b^2*c*d*g^3 + a^4*b*d^2*g^3 + (b^5*c^2*g^3 - 2*a*b^4*c*d*g^3
+ a^2*b^3*d^2*g^3)*x^2 + 2*(a*b^4*c^2*g^3 - 2*a^2*b^3*c*d*g^3 + a^3*b^2*d^2
*g^3)*x))*B^2*c*i - 1/4*(2*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5
*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^
2*d)*g^3) + 2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*
b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d +
a^2*b^2*d^2)*g^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (7*a*b^2*c^2 - 8*
a^2*b*c*d + a^3*d^2 - 2*(2*a^2*b*c*d - a^3*d^2 + (2*b^3*c*d - a*b^2*d^2)*x^
2 + 2*(2*a*b^2*c*d - a^2*b*d^2)*x)*log(b*x + a)^2 - 2*(2*a^2*b*c*d - a^3*d^
2 + (2*b^3*c*d - a*b^2*d^2)*x^2 + 2*(2*a*b^2*c*d - a^2*b*d^2)*x)*log(d*x +
c)^2 + 2*(4*b^3*c^2 - 5*a*b^2*c*d + a^2*b*d^2)*x + 2*(4*a^2*b*c*d - a^3*d^2
 + (4*b^3*c*d - a*b^2*d^2)*x^2 + 2*(4*a*b^2*c*d - a^2*b*d^2)*x)*log(b*x + a
) - 2*(4*a^2*b*c*d - a^3*d^2 + (4*b^3*c*d - a*b^2*d^2)*x^2 + 2*(4*a*b^2*c*d
 - a^2*b*d^2)*x - 2*(2*a^2*b*c*d - a^3*d^2 + (2*b^3*c*d - a*b^2*d^2)*x^2 +
2*(2*a*b^2*c*d - a^2*b*d^2)*x)*log(b*x + a))*log(d*x + c))/(a^2*b^4*c^2*g^3
 - 2*a^3*b^3*c*d*g^3 + a^4*b^2*d^2*g^3 + (b^6*c^2*g^3 - 2*a*b^5*c*d*g^3 + a
^2*b^4*d^2*g^3)*x^2 + 2*(a*b^5*c^2*g^3 - 2*a^2*b^4*c*d*g^3 + a^3*b^3*d^2*g^
3)*x))*B^2*d*i - 1/2*A*B*d*i*(2*(2*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x
+ c))/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + (3*a*b*c - a^2*d + 2*(2
*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3
*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*
c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((
```

```
b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3)) + 1/2*A*B*c*i*((2*b*d*x - b*c +
3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^
2*c - a^3*b*d)*g^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^3*g^3*x^2 +
 2*a*b^2*g^3*x + a^2*b*g^3) + 2*d^2*log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d +
a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g
^3)) - 1/2*B^2*c*i*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^3*g^3*x^2 + 2*
a*b^2*g^3*x + a^2*b*g^3) - 1/2*(2*b*x + a)*A^2*d*i/(b^4*g^3*x^2 + 2*a*b^3*g
^3*x + a^2*b^2*g^3) - 1/2*A^2*c*i/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3)
```

mupad [B] time = 6.18, size = 469, normalized size = 3.33

$$-\frac{x\left(2\,b\,d\,i\,A^2+2\,b\,d\,i\,A\,B+b\,d\,i\,B^2\right)+A^2\,a\,d\,i+A^2\,b\,c\,i+\frac{B^2\,a\,d\,i}{2}+\frac{B^2\,b\,c\,i}{2}+A\,B\,a\,d\,i+A\,B\,b\,c\,i}{2\,a^2\,b^2\,g^3+4\,a\,b^3\,g^3\,x+2\,b^4\,g^3\,x^2}-\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^3,
x)
```

```
[Out] - (x*(2*A^2*b*d*i + B^2*b*d*i + 2*A*B*b*d*i) + A^2*a*d*i + A^2*b*c*i + (B^2
*a*d*i)/2 + (B^2*b*c*i)/2 + A*B*a*d*i + A*B*b*c*i)/(2*a^2*b^2*g^3 + 2*b^4*g
^3*x^2 + 4*a*b^3*g^3*x) - log((e*(a + b*x))/(c + d*x))^2*(((B^2*c*i)/(2*b^2
*g^3) + (B^2*a*d*i)/(2*b^3*g^3) + (B^2*d*i*x)/(b^2*g^3))/(2*a*x + b*x^2 + a
^2/b) - (B^2*d^2*i)/(2*b^2*g^3*(a*d - b*c))) - (log((e*(a + b*x))/(c + d*x)
)*(x*((B^2*i)/(b^2*g^3) + (2*A*B*i)/(b^2*g^3)) + (A*B*a*i)/(b^3*g^3) + (B*i
*(A*b*c - B*a*d + B*b*c))/(b^3*d*g^3) + (B^2*d^2*i*((2*a^2*d^2 + b^2*c^2 -
3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)))/(b^2*g^3*(a*d - b*c))))/
((b*x^2)/d + a^2/(b*d) + (2*a*x)/d) - (B*d^2*i*atan((((2*b^3*c*g^3 + 2*a*b^
2*d*g^3)/(2*b^2*g^3) + 2*b*d*x)*1i)/(a*d - b*c))*(2*A + B)*1i)/(b^2*g^3*(a*
d - b*c))
```

sympy [B] time = 14.31, size = 714, normalized size = 5.06

$$-\frac{Bd^2i\,(2A+B)\log\left(x+\frac{2ABad^3i+2ABbcd^2i+B^2ad^3i+B^2bcd^2i-\frac{Ba^2d^4i(2A+B)}{ad-bc}+\frac{2Babcd^3i(2A+B)}{ad-bc}-\frac{Bb^2c^2d^2i(2A+B)}{ad-bc}}{4ABbd^3i+2B^2bd^3i}\right)}{2b^2g^3\,(ad-bc)}+\frac{Bd^2i\,(2A+B)\log\left(x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**3,x)
```

```
[Out] -B*d**2*i*(2*A + B)*log(x + (2*A*B*a*d**3*i + 2*A*B*b*c*d**2*i + B**2*a*d**
3*i + B**2*b*c*d**2*i - B*a**2*d**4*i*(2*A + B)/(a*d - b*c) + 2*B*a*b*c*d**
3*i*(2*A + B)/(a*d - b*c) - B*b**2*c**2*d**2*i*(2*A + B)/(a*d - b*c))/(4*A*
B*b*d**3*i + 2*B**2*b*d**3*i))/(2*b**2*g**3*(a*d - b*c)) + B*d**2*i*(2*A +
B)*log(x + (2*A*B*a*d**3*i + 2*A*B*b*c*d**2*i + B**2*a*d**3*i + B**2*b*c*d*
*2*i + B*a**2*d**4*i*(2*A + B)/(a*d - b*c) - 2*B*a*b*c*d**3*i*(2*A + B)/(a*
d - b*c) + B*b**2*c**2*d**2*i*(2*A + B)/(a*d - b*c))/(4*A*B*b*d**3*i + 2*B*
*2*b*d**3*i))/(2*b**2*g**3*(a*d - b*c)) + (B**2*c**2*i + 2*B**2*c*d*i*x + B
**2*d**2*i*x**2)*log(e*(a + b*x)/(c + d*x))**2/(2*a**3*d*g**3 - 2*a**2*b*c*
g**3 + 4*a**2*b*d*g**3*x - 4*a*b**2*c*g**3*x + 2*a*b**2*d*g**3*x**2 - 2*b**
3*c*g**3*x**2) + (-2*A**2*a*d*i - 2*A**2*b*c*i - 2*A*B*a*d*i - 2*A*B*b*c*i
- B**2*a*d*i - B**2*b*c*i + x*(-4*A**2*b*d*i - 4*A*B*b*d*i - 2*B**2*b*d*i))
/(4*a**2*b**2*g**3 + 8*a*b**3*g**3*x + 4*b**4*g**3*x**2) + (-2*A*B*a*d*i -
2*A*B*b*c*i - 4*A*B*b*d*i*x - B**2*a*d*i - B**2*b*c*i - 2*B**2*b*d*i*x)*log
(e*(a + b*x)/(c + d*x))/(2*a**2*b**2*g**3 + 4*a*b**3*g**3*x + 2*b**4*g**3*x
**2)
```

3.62 $\int \frac{(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^4}\,dx$

Optimal. Leaf size=287

$$-\frac{bi(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{3g^4(a+bx)^3(bc-ad)^2}-\frac{2bBi(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{9g^4(a+bx)^3(bc-ad)^2}+\frac{di(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2g^4(a+bx)^2(bc-ad)^2}+$$

```
[Out] 1/4*B^2*d*i*(d*x+c)^2/(-a*d+b*c)^2/g^4/(b*x+a)^2-2/27*b*B^2*i*(d*x+c)^3/(-a
*d+b*c)^2/g^4/(b*x+a)^3+1/2*B*d*i*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a
*d+b*c)^2/g^4/(b*x+a)^2-2/9*b*B*i*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a
*d+b*c)^2/g^4/(b*x+a)^3+1/2*d*i*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/(-a
*d+b*c)^2/g^4/(b*x+a)^2-1/3*b*i*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/(-a
*d+b*c)^2/g^4/(b*x+a)^3
```

Rubi [C] time = 2.29, antiderivative size = 741, normalized size of antiderivative = 2.58, number of steps used = 66, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2d^3i\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{3b^2g^4(bc-ad)^2}+\frac{B^2d^3i\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{3b^2g^4(bc-ad)^2}+\frac{Bd^3i\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^2g^4(bc-ad)^2}-\frac{Bd^3i\log(c+}{3}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^4,
x]
```

```
[Out] (-2*B^2*(b*c - a*d)*i)/(27*b^2*g^4*(a + b*x)^3) + (B^2*d*i)/(36*b^2*g^4*(a
+ b*x)^2) + (5*B^2*d^2*i)/(18*b^2*(b*c - a*d)*g^4*(a + b*x)) + (5*B^2*d^3*i
*Log[a + b*x])/(18*b^2*(b*c - a*d)^2*g^4) - (B^2*d^3*i*Log[a + b*x]^2)/(6*b
^2*(b*c - a*d)^2*g^4) - (2*B*(b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*
x)]))/(9*b^2*g^4*(a + b*x)^3) - (B*d*i*(A + B*Log[(e*(a + b*x))/(c + d*x)])
)/(6*b^2*g^4*(a + b*x)^2) + (B*d^2*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/
(3*b^2*(b*c - a*d)*g^4*(a + b*x)) + (B*d^3*i*Log[a + b*x]*(A + B*Log[(e*(a
+ b*x))/(c + d*x)]))/(3*b^2*(b*c - a*d)^2*g^4) - ((b*c - a*d)*i*(A + B*Log[
(e*(a + b*x))/(c + d*x)])^2)/(3*b^2*g^4*(a + b*x)^3) - (d*i*(A + B*Log[(e*(
a + b*x))/(c + d*x)])^2)/(2*b^2*g^4*(a + b*x)^2) - (5*B^2*d^3*i*Log[c + d*x
])/(18*b^2*(b*c - a*d)^2*g^4) + (B^2*d^3*i*Log[-((d*(a + b*x))/(b*c - a*d))
]*Log[c + d*x])/(3*b^2*(b*c - a*d)^2*g^4) - (B*d^3*i*(A + B*Log[(e*(a + b*x
))/(c + d*x)])*Log[c + d*x])/(3*b^2*(b*c - a*d)^2*g^4) - (B^2*d^3*i*Log[c +
 d*x]^2)/(6*b^2*(b*c - a*d)^2*g^4) + (B^2*d^3*i*Log[a + b*x]*Log[(b*(c + d*
x))/(b*c - a*d)])/(3*b^2*(b*c - a*d)^2*g^4) + (B^2*d^3*i*PolyLog[2, -((d*(a
 + b*x))/(b*c - a*d))])/(3*b^2*(b*c - a*d)^2*g^4) + (B^2*d^3*i*PolyLog[2, (
b*(c + d*x))/(b*c - a*d)])/(3*b^2*(b*c - a*d)^2*g^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
```

```
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(62c+62dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^4}\,dx = \int \left(\frac{62(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{bg^4(a+bx)^4} + \frac{62d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{bg^4(a+bx)^3}\right.$$

$$= \frac{(62d)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^3}\,dx}{bg^4} + \frac{(62(bc-ad))\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^4}\,dx}{bg^4}$$

$$= -\frac{62(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^2g^4(a+bx)^3} - \frac{31d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^4(a+bx)^2}$$

$$= -\frac{62(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^2g^4(a+bx)^3} - \frac{31d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^4(a+bx)^2}$$

$$= -\frac{62(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^2g^4(a+bx)^3} - \frac{31d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^4(a+bx)^2}$$

$$= -\frac{62(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^2g^4(a+bx)^3} - \frac{31d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^4(a+bx)^2}$$

$$= -\frac{124B(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9b^2g^4(a+bx)^3} - \frac{31Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^2g^4(a+bx)^2}$$

$$= -\frac{124B(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9b^2g^4(a+bx)^3} - \frac{31Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^2g^4(a+bx)^2}$$

$$= -\frac{124B(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9b^2g^4(a+bx)^3} - \frac{31Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{3b^2g^4(a+bx)^2}$$

$$= -\frac{124B^2(bc-ad)}{27b^2g^4(a+bx)^3} + \frac{31B^2d}{18b^2g^4(a+bx)^2} + \frac{155B^2d^2}{9b^2(bc-ad)g^4(a+bx)} +$$

$$= -\frac{124B^2(bc-ad)}{27b^2g^4(a+bx)^3} + \frac{31B^2d}{18b^2g^4(a+bx)^2} + \frac{155B^2d^2}{9b^2(bc-ad)g^4(a+bx)} +$$

$$= -\frac{124B^2(bc-ad)}{27b^2g^4(a+bx)^3} + \frac{31B^2d}{18b^2g^4(a+bx)^2} + \frac{155B^2d^2}{9b^2(bc-ad)g^4(a+bx)} +$$

$$= -\frac{124B^2(bc-ad)}{27b^2g^4(a+bx)^3} + \frac{31B^2d}{18b^2g^4(a+bx)^2} + \frac{155B^2d^2}{9b^2(bc-ad)g^4(a+bx)} +$$

Mathematica [C] time = 1.04, size = 1035, normalized size = 3.61

$$-\frac{i\left(36\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2(bc-ad)^3+54d(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2(bc-ad)^2+27Bd(a+bx)\left(2\left(A\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g
*x)^4,x]
```

```
[Out] -1/108*(i*(36*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 54*d*(
b*c - a*d)^2*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 27*B*d*(a +
 b*x)*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d*(-(b*c) +
 a*d)*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4*d^2*(a + b*x)^2*Lo
g[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d^2*(a + b*x)^2*(A + B*
Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 4*B*d*(a + b*x)*(b*c - a*d + d
*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + B*((b*c - a*d)^2 + 2*
d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*
x)^2*Log[c + d*x]) + 2*B*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Lo
g[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])
 - 2*B*d^2*(a + b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x]
)*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 2*B*(12*(b*c -
 a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 18*d*(b*c - a*d)^2*(a + b*x)
*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A +
 B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^3*(a + b*x)^3*Log[a + b*x]*(A + B*L
og[(e*(a + b*x))/(c + d*x)]) - 36*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/
(c + d*x)])*Log[c + d*x] + 36*B*d^2*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*Lo
g[a + b*x] - d*(a + b*x)*Log[c + d*x]) - 9*B*d*(a + b*x)*((b*c - a*d)^2 + 2
*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b
*x)^2*Log[c + d*x]) + 2*B*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) +
6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a +
 b*x)^3*Log[c + d*x]) - 18*B*d^3*(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] -
2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*
d)]) + 18*B*d^3*(a + b*x)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c +
 d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))))/(b^2*(b*c
 - a*d)^2*g^4*(a + b*x)^3)
```

fricas [B] time = 0.84, size = 601, normalized size = 2.09

$$\frac{6\left(\left(6\,AB + 5\,B^2\right)b^3cd^2 - \left(6\,AB + 5\,B^2\right)ab^2d^3\right)ix^2 - 3\left(\left(18\,A^2 + 6\,AB - B^2\right)b^3c^2d - 18\left(2\,A^2 + 2\,AB + B^2\right)ab^2cd^2 \cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4,x, algor
ithm="fricas")
```

```
[Out] 1/108*(6*((6*A*B + 5*B^2)*b^3*c*d^2 - (6*A*B + 5*B^2)*a*b^2*d^3)*i*x^2 - 3*
((18*A^2 + 6*A*B - B^2)*b^3*c^2*d - 18*(2*A^2 + 2*A*B + B^2)*a*b^2*c*d^2 +
(18*A^2 + 30*A*B + 19*B^2)*a^2*b*d^3)*i*x + 18*(B^2*b^3*d^3*i*x^3 + 3*B^2*a
*b^2*d^3*i*x^2 - 3*(B^2*b^3*c^2*d - 2*B^2*a*b^2*c*d^2)*i*x - (2*B^2*b^3*c^3
 - 3*B^2*a*b^2*c^2*d)*i)*log((b*e*x + a*e)/(d*x + c))^2 - (4*(9*A^2 + 6*A*B
 + 2*B^2)*b^3*c^3 - 27*(2*A^2 + 2*A*B + B^2)*a*b^2*c^2*d + (18*A^2 + 30*A*B
 + 19*B^2)*a^3*d^3)*i + 6*((6*A*B + 5*B^2)*b^3*d^3*i*x^3 + 3*(2*B^2*b^3*c*d
^2 + 3*(2*A*B + B^2)*a*b^2*d^3)*i*x^2 - 3*((6*A*B + B^2)*b^3*c^2*d - 6*(2*A
*B + B^2)*a*b^2*c*d^2)*i*x - (4*(3*A*B + B^2)*b^3*c^3 - 9*(2*A*B + B^2)*a*b
^2*c^2*d)*i)*log((b*e*x + a*e)/(d*x + c)))/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^
5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a
^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*
c*d + a^5*b^2*d^2)*g^4)
```

giac [A] time = 1.32, size = 437, normalized size = 1.52

$$-\frac{\left(36\,B^2bie^4\log\left(\frac{bxe+ae}{dx+c}\right)^2-\frac{54\,(bxe+ae)B^2die^3\log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c}+72\,ABbie^4\log\left(\frac{bxe+ae}{dx+c}\right)+24\,B^2bie^4\log\left(\frac{bxe+ae}{dx+c}\right)-\frac{108\,(bxe}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4,x, algor
ithm="giac")
```

```
[Out] -1/108*(36*B^2*b*i*e^4*log((b*x*e + a*e)/(d*x + c))^2 - 54*(b*x*e + a*e)*B^
2*d*i*e^3*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 72*A*B*b*i*e^4*log((b*
x*e + a*e)/(d*x + c)) + 24*B^2*b*i*e^4*log((b*x*e + a*e)/(d*x + c)) - 108*(
b*x*e + a*e)*A*B*d*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 54*(b*x*e
 + a*e)*B^2*d*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 36*A^2*b*i*e^4
 + 24*A*B*b*i*e^4 + 8*B^2*b*i*e^4 - 54*(b*x*e + a*e)*A^2*d*i*e^3/(d*x + c)
- 54*(b*x*e + a*e)*A*B*d*i*e^3/(d*x + c) - 27*(b*x*e + a*e)*B^2*d*i*e^3/(d*
x + c))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*
d)))/((b*x*e + a*e)^3*b*c*g^4/(d*x + c)^3 - (b*x*e + a*e)^3*a*d*g^4/(d*x +
c)^3)
```

maple [B] time = 0.05, size = 1765, normalized size = 6.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^4,x)
```

```
[Out] 1/2*d^2*e^2*i/(a*d-b*c)^3/g^4*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2
*a-1/2*d*e^2*i/(a*d-b*c)^3/g^4*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
2*b*c-1/3*d*e^3*i/(a*d-b*c)^3/g^4*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^3*a+1/3*e^3*i/(a*d-b*c)^3/g^4*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
+b/d*e)^3*c+d^2*e^2*i/(a*d-b*c)^3/g^4*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-d*e^2*i/(a*d-b*c)^3/g^4*A*B/(1/(
d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1
/2*d^2*e^2*i/(a*d-b*c)^3/g^4*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*
a-1/2*d*e^2*i/(a*d-b*c)^3/g^4*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2
*b*c-2/3*d*e^3*i/(a*d-b*c)^3/g^4*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2/3*e^3*i/(a*d-b*c)^3/g^4*A*B*b^2/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-
2/9*d*e^3*i/(a*d-b*c)^3/g^4*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3
*a+2/9*e^3*i/(a*d-b*c)^3/g^4*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^3*c+1/2*d^2*e^2*i/(a*d-b*c)^3/g^4*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/2*d*e^2*i/(a*d-b*c)^3/g^4*B^2/
(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2
*b*c+1/2*d^2*e^2*i/(a*d-b*c)^3/g^4*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*d*e^2*i/(a*d-b*c)^3/g^4*B^2/(1/
(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+
1/4*d^2*e^2*i/(a*d-b*c)^3/g^4*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2
*a-1/4*d*e^2*i/(a*d-b*c)^3/g^4*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
2*b*c-1/3*d*e^3*i/(a*d-b*c)^3/g^4*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/3*e^3*i/(a*d-b*c)^3/g^4*B^2*b^
2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
^2*c-2/9*d*e^3*i/(a*d-b*c)^3/g^4*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2/9*e^3*i/(a*d-b*c)^3/g^4*B^2*b^2/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-
```

```
2/27*d*e^3*i/(a*d-b*c)^3/g^4*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
3*a+2/27*e^3*i/(a*d-b*c)^3/g^4*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^3*c
```

maxima [B] time = 3.46, size = 3282, normalized size = 11.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4,x, algor
ithm="maxima")
```

```
[Out] -1/6*(3*b*x + a)*B^2*d*i*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^5*g^4*x^
3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/54*(6*((6*b^2*d^2*
x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6
*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d +
a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x
+ (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4
*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x +
c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4))*log(b*e*x
/(d*x + c) + a*e/(d*x + c)) + (4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2
 - 85*a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*
d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b
^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*
a*b^2*c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b
*d^3*x + a^3*d^3)*log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*
a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x
 + a^3*d^3)*log(b*x + a))*log(d*x + c))/(a^3*b^4*c^3*g^4 - 3*a^4*b^3*c^2*d*
g^4 + 3*a^5*b^2*c*d^2*g^4 - a^6*b*d^3*g^4 + (b^7*c^3*g^4 - 3*a*b^6*c^2*d*g^
4 + 3*a^2*b^5*c*d^2*g^4 - a^3*b^4*d^3*g^4)*x^3 + 3*(a*b^6*c^3*g^4 - 3*a^2*b
^5*c^2*d*g^4 + 3*a^3*b^4*c*d^2*g^4 - a^4*b^3*d^3*g^4)*x^2 + 3*(a^2*b^5*c^3*
g^4 - 3*a^3*b^4*c^2*d*g^4 + 3*a^4*b^3*c*d^2*g^4 - a^5*b^2*d^3*g^4)*x))*B^2*
c*i - 1/108*(6*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*
b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*
a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d
^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^
4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x +
 a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*
b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 -
 a^3*b^2*d^3)*g^4))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (19*a*b^3*c^3 -
189*a^2*b^2*c^2*d + 189*a^3*b*c*d^2 - 19*a^4*d^3 - 6*(27*b^4*c^2*d - 32*a*b
^3*c*d^2 + 5*a^2*b^2*d^3)*x^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^2
- a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d^2
 - a^3*b*d^3)*x)*log(b*x + a)^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^
2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d
^2 - a^3*b*d^3)*x)*log(d*x + c)^2 + 3*(9*b^4*c^3 - 125*a*b^3*c^2*d + 135*a^
2*b^2*c*d^2 - 19*a^3*b*d^3)*x - 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + (27*b^4*c*d
^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + 3*(27*a^2*
b^2*c*d^2 - 5*a^3*b*d^3)*x)*log(b*x + a) + 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 +
(27*b^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 +
 3*(27*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x - 6*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4
*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^
2*c*d^2 - a^3*b*d^3)*x)*log(b*x + a))*log(d*x + c))/(a^3*b^5*c^3*g^4 - 3*a^
4*b^4*c^2*d*g^4 + 3*a^5*b^3*c*d^2*g^4 - a^6*b^2*d^3*g^4 + (b^8*c^3*g^4 - 3*
a*b^7*c^2*d*g^4 + 3*a^2*b^6*c*d^2*g^4 - a^3*b^5*d^3*g^4)*x^3 + 3*(a*b^7*c^3
*g^4 - 3*a^2*b^6*c^2*d*g^4 + 3*a^3*b^5*c*d^2*g^4 - a^4*b^4*d^3*g^4)*x^2 + 3
*(a^2*b^6*c^3*g^4 - 3*a^3*b^5*c^2*d*g^4 + 3*a^4*b^4*c*d^2*g^4 - a^5*b^3*d^3
*g^4)*x))*B^2*d*i - 1/18*A*B*d*i*(6*(3*b*x + a)*log(b*e*x/(d*x + c) + a*e/(
d*x + c))/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) +
 (5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 +
```

```
3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2
*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3
*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b
^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 -
 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3
)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g
^4)) - 1/9*A*B*c*i*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3
*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 +
3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^
3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*
g^4) + 6*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^
2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c
^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3
*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4)) - 1/3*B^2*c*i*log(b*e*x/(
d*x + c) + a*e/(d*x + c))^2/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*
x + a^3*b*g^4) - 1/6*(3*b*x + a)*A^2*d*i/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3
*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*A^2*c*i/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2
+ 3*a^2*b^2*g^4*x + a^3*b*g^4)
```

mupad [**B**] time = 7.70, size = 955, normalized size = 3.33

$$-\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2\left(\frac{\frac{B^2\,c\,i}{3\,b^2\,g^4}+\frac{B^2\,a\,d\,i}{6\,b^3\,g^4}+\frac{B^2\,d\,i\,x}{2\,b^2\,g^4}}{3\,a^2\,x+\frac{a^3}{b}+b^2\,x^3+3\,a\,b\,x^2}-\frac{B^2\,d^3\,i}{6\,b^2\,g^4\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}\right)-\frac{18\,i\,A^2\,a^2\,d^2+18\,i\,A^2\,a\,b\,c\,d-36\ldots}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^4,
x)
```

```
[Out] - log((e*(a + b*x))/(c + d*x))^2*(((B^2*c*i)/(3*b^2*g^4) + (B^2*a*d*i)/(6*b
^3*g^4) + (B^2*d*i*x)/(2*b^2*g^4))/(3*a^2*x + a^3/b + b^2*x^3 + 3*a*b*x^2)
- (B^2*d^3*i)/(6*b^2*g^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - ((18*A^2*a^2*d
^2*i - 36*A^2*b^2*c^2*i + 19*B^2*a^2*d^2*i - 8*B^2*b^2*c^2*i + 30*A*B*a^2*d
^2*i - 24*A*B*b^2*c^2*i + 18*A^2*a*b*c*d*i + 19*B^2*a*b*c*d*i + 30*A*B*a*b*
c*d*i)/(6*(a*d - b*c)) + (x^2*(5*B^2*b^2*d^2*i + 6*A*B*b^2*d^2*i))/(a*d - b
*c) + (x*(18*A^2*a*b*d^2*i + 19*B^2*a*b*d^2*i - 18*A^2*b^2*c*d*i + B^2*b^2*
c*d*i + 30*A*B*a*b*d^2*i - 6*A*B*b^2*c*d*i))/(2*(a*d - b*c)))/(18*a^3*b^2*g
^4 + 18*b^5*g^4*x^3 + 54*a^2*b^3*g^4*x + 54*a*b^4*g^4*x^2) - (log((e*(a + b
*x))/(c + d*x))*(x*((A*B*i)/(b^2*g^4) + (B^2*d^3*i*(b*((3*a^2*d^2 + b^2*c^2
 - 4*a*b*c*d)/(6*b*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^2*d^2 + b^2*c^2
 - 4*a*b*c*d)/(3*d^3) + (2*a*(a*d - b*c))/(3*d^2)))/(3*b^2*g^4*(a^2*d^2 + b
^2*c^2 - 2*a*b*c*d))) + (A*B*a*i)/(3*b^3*g^4) + (B*i*(2*A*b*c - B*a*d + B*b
*c))/(3*b^3*d*g^4) + (B^2*d^3*i*(a*((3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)/(6*b*
d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^3*d^3 - b^3*c^3 + 4*a*b^2*c^2*d -
6*a^2*b*c*d^2)/(3*b*d^4)))/(3*b^2*g^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B
^2*d^3*i*x^2*((b^2*c - a*b*d)/(3*d^2) - (2*b*(a*d - b*c))/(3*d^2)))/(3*b^2*
g^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))))/((3*a^2*x)/d + a^3/(b*d) + (b^2*x^3)
/d + (3*a*b*x^2)/d) - (B*d^3*i*atan(((2*b*d*x - (18*b^4*c^2*g^4 - 18*a^2*b^
2*d^2*g^4)/(18*b^2*g^4*(a*d - b*c)))*1i)/(a*d - b*c))*(6*A + 5*B)*1i)/(9*b^
2*g^4*(a*d - b*c)^2)
```

sympy [**B**] time = 29.46, size = 1387, normalized size = 4.83

$$-\frac{Bd^3i\,(6A+5B)\log\left(x+\frac{6ABad^4i+6ABbcd^3i+5B^2ad^4i+5B^2bcd^3i-\frac{Ba^3d^6i(6A+5B)}{(ad-bc)^2}+\frac{3Ba^2bcd^5i(6A+5B)}{(ad-bc)^2}-\frac{3Bab^2c^2d^4i(6A+5B)}{(ad-bc)^2}+\frac{Bb^3c^3d^3i(6A+5B)}{(ad-bc)^2}\ldots}{12ABbd^4i+10B^2bd^4i}\right)}{18b^2g^4\,(ad-bc)^2}\ldots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**4,x)
```

```
[Out] -B*d**3*i*(6*A + 5*B)*log(x + (6*A*B*a*d**4*i + 6*A*B*b*c*d**3*i + 5*B**2*a
*d**4*i + 5*B**2*b*c*d**3*i - B*a**3*d**6*i*(6*A + 5*B)/(a*d - b*c)**2 + 3*
B*a**2*b*c*d**5*i*(6*A + 5*B)/(a*d - b*c)**2 - 3*B*a*b**2*c**2*d**4*i*(6*A
+ 5*B)/(a*d - b*c)**2 + B*b**3*c**3*d**3*i*(6*A + 5*B)/(a*d - b*c)**2)/(12*
A*B*b*d**4*i + 10*B**2*b*d**4*i))/(18*b**2*g**4*(a*d - b*c)**2) + B*d**3*i*
(6*A + 5*B)*log(x + (6*A*B*a*d**4*i + 6*A*B*b*c*d**3*i + 5*B**2*a*d**4*i +
5*B**2*b*c*d**3*i + B*a**3*d**6*i*(6*A + 5*B)/(a*d - b*c)**2 - 3*B*a**2*b*c
*d**5*i*(6*A + 5*B)/(a*d - b*c)**2 + 3*B*a*b**2*c**2*d**4*i*(6*A + 5*B)/(a*
d - b*c)**2 - B*b**3*c**3*d**3*i*(6*A + 5*B)/(a*d - b*c)**2)/(12*A*B*b*d**4
*i + 10*B**2*b*d**4*i))/(18*b**2*g**4*(a*d - b*c)**2) + (3*B**2*a*c**2*d*i
+ 6*B**2*a*c*d**2*i*x + 3*B**2*a*d**3*i*x**2 - 2*B**2*b*c**3*i - 3*B**2*b*c
**2*d*i*x + B**2*b*d**3*i*x**3)*log(e*(a + b*x)/(c + d*x))**2/(6*a**5*d**2*
g**4 - 12*a**4*b*c*d*g**4 + 18*a**4*b*d**2*g**4*x + 6*a**3*b**2*c**2*g**4 -
 36*a**3*b**2*c*d*g**4*x + 18*a**3*b**2*d**2*g**4*x**2 + 18*a**2*b**3*c**2*
g**4*x - 36*a**2*b**3*c*d*g**4*x**2 + 6*a**2*b**3*d**2*g**4*x**3 + 18*a*b**
4*c**2*g**4*x**2 - 12*a*b**4*c*d*g**4*x**3 + 6*b**5*c**2*g**4*x**3) + (-6*A
*B*a**2*d**2*i - 6*A*B*a*b*c*d*i - 18*A*B*a*b*d**2*i*x + 12*A*B*b**2*c**2*i
 + 18*A*B*b**2*c*d*i*x - 5*B**2*a**2*d**2*i - 5*B**2*a*b*c*d*i - 15*B**2*a*
b*d**2*i*x + 4*B**2*b**2*c**2*i + 3*B**2*b**2*c*d*i*x - 6*B**2*b**2*d**2*i*
x**2)*log(e*(a + b*x)/(c + d*x))/(18*a**4*b**2*d*g**4 - 18*a**3*b**3*c*g**4
 + 54*a**3*b**3*d*g**4*x - 54*a**2*b**4*c*g**4*x + 54*a**2*b**4*d*g**4*x**2
 - 54*a*b**5*c*g**4*x**2 + 18*a*b**5*d*g**4*x**3 - 18*b**6*c*g**4*x**3) + (
-18*A**2*a**2*d**2*i - 18*A**2*a*b*c*d*i + 36*A**2*b**2*c**2*i - 30*A*B*a**
2*d**2*i - 30*A*B*a*b*c*d*i + 24*A*B*b**2*c**2*i - 19*B**2*a**2*d**2*i - 19
*B**2*a*b*c*d*i + 8*B**2*b**2*c**2*i + x**2*(-36*A*B*b**2*d**2*i - 30*B**2*
b**2*d**2*i) + x*(-54*A**2*a*b*d**2*i + 54*A**2*b**2*c*d*i - 90*A*B*a*b*d**
2*i + 18*A*B*b**2*c*d*i - 57*B**2*a*b*d**2*i - 3*B**2*b**2*c*d*i))/(108*a**
4*b**2*d*g**4 - 108*a**3*b**3*c*g**4 + x**3*(108*a*b**5*d*g**4 - 108*b**6*c
*g**4) + x**2*(324*a**2*b**4*d*g**4 - 324*a*b**5*c*g**4) + x*(324*a**3*b**3
*d*g**4 - 324*a**2*b**4*c*g**4))
```

3.63 $\int \frac{(ci+dix)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^5}\,dx$

Optimal. Leaf size=445

$$-\frac{b^2i(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{4g^5(a+bx)^4(bc-ad)^3}-\frac{b^2Bi(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{8g^5(a+bx)^4(bc-ad)^3}-\frac{d^2i(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2g^5(a+bx)^2(bc-ad)^3}$$

```
[Out] -1/4*B^2*d^2*i*(d*x+c)^2/(-a*d+b*c)^3/g^5/(b*x+a)^2+4/27*b*B^2*d*i*(d*x+c)^
3/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/32*b^2*B^2*i*(d*x+c)^4/(-a*d+b*c)^3/g^5/(b*x
+a)^4-1/2*B*d^2*i*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^5/(b
*x+a)^2+4/9*b*B*d*i*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^5/
(b*x+a)^3-1/8*b^2*B*i*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^
5/(b*x+a)^4-1/2*d^2*i*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/
g^5/(b*x+a)^2+2/3*b*d*i*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^
3/g^5/(b*x+a)^3-1/4*b^2*i*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c
)^3/g^5/(b*x+a)^4
```

Rubi [C] time = 2.61, antiderivative size = 826, normalized size of antiderivative = 1.86, number of steps used = 74, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i\log^2(a+bx)d^4}{12b^2(bc-ad)^3g^5}+\frac{B^2i\log^2(c+dx)d^4}{12b^2(bc-ad)^3g^5}-\frac{13B^2i\log(a+bx)d^4}{72b^2(bc-ad)^3g^5}-\frac{Bi\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)d^4}{6b^2(bc-ad)^3g^5}+\frac{13B^2i}{72b^2}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^5,
x]
```

```
[Out] -(B^2*(b*c - a*d)*i)/(32*b^2*g^5*(a + b*x)^4) + (5*B^2*d*i)/(216*b^2*g^5*(a
 + b*x)^3) + (B^2*d^2*i)/(144*b^2*(b*c - a*d)*g^5*(a + b*x)^2) - (13*B^2*d^
3*i)/(72*b^2*(b*c - a*d)^2*g^5*(a + b*x)) - (13*B^2*d^4*i*Log[a + b*x])/(72
*b^2*(b*c - a*d)^3*g^5) + (B^2*d^4*i*Log[a + b*x]^2)/(12*b^2*(b*c - a*d)^3*
g^5) - (B*(b*c - a*d)*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(8*b^2*g^5*(a
 + b*x)^4) - (B*d*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(18*b^2*g^5*(a +
b*x)^3) + (B*d^2*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(12*b^2*(b*c - a*d
)*g^5*(a + b*x)^2) - (B*d^3*i*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(6*b^2*
(b*c - a*d)^2*g^5*(a + b*x)) - (B*d^4*i*Log[a + b*x]*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(6*b^2*(b*c - a*d)^3*g^5) - ((b*c - a*d)*i*(A + B*Log[(e*(a
 + b*x))/(c + d*x)])^2)/(4*b^2*g^5*(a + b*x)^4) - (d*i*(A + B*Log[(e*(a + b
*x))/(c + d*x)])^2)/(3*b^2*g^5*(a + b*x)^3) + (13*B^2*d^4*i*Log[c + d*x])/(
72*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*Log[-((d*(a + b*x))/(b*c - a*d))]*Lo
g[c + d*x])/(6*b^2*(b*c - a*d)^3*g^5) + (B*d^4*i*(A + B*Log[(e*(a + b*x))/(
c + d*x)])*Log[c + d*x])/(6*b^2*(b*c - a*d)^3*g^5) + (B^2*d^4*i*Log[c + d*x
]^2)/(12*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*Log[a + b*x]*Log[(b*(c + d*x))
/(b*c - a*d)])/(6*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*PolyLog[2, -((d*(a +
b*x))/(b*c - a*d))])/(6*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*PolyLog[2, (b*(
c + d*x))/(b*c - a*d)])/(6*b^2*(b*c - a*d)^3*g^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(63c+63dx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^5}\,dx = \int \left(\frac{63(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{bg^5(a+bx)^5}+\frac{63d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right.}{bg^5(a+bx)^4}\right.$$

$$=\frac{(63d)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^4}\,dx}{bg^5}+\frac{(63(bc-ad))\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^5}\,dx}{bg^5}$$

$$=-\frac{63(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^2g^5(a+bx)^4}-\frac{21d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^5(a+bx)^3}$$

$$=-\frac{63(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^2g^5(a+bx)^4}-\frac{21d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^5(a+bx)^3}$$

$$=-\frac{63(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^2g^5(a+bx)^4}-\frac{21d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^5(a+bx)^3}$$

$$=-\frac{63(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^2g^5(a+bx)^4}-\frac{21d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^5(a+bx)^3}$$

$$=-\frac{63B(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{8b^2g^5(a+bx)^4}-\frac{7Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2b^2g^5(a+bx)^3}$$

$$=-\frac{63B(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{8b^2g^5(a+bx)^4}-\frac{7Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2b^2g^5(a+bx)^3}$$

$$=-\frac{63B(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{8b^2g^5(a+bx)^4}-\frac{7Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2b^2g^5(a+bx)^3}$$

$$=-\frac{63B^2(bc-ad)}{32b^2g^5(a+bx)^4}+\frac{35B^2d}{24b^2g^5(a+bx)^3}+\frac{7B^2d^2}{16b^2(bc-ad)g^5(a+bx)^2}$$

$$=-\frac{63B^2(bc-ad)}{32b^2g^5(a+bx)^4}+\frac{35B^2d}{24b^2g^5(a+bx)^3}+\frac{7B^2d^2}{16b^2(bc-ad)g^5(a+bx)^2}$$

$$=-\frac{63B^2(bc-ad)}{32b^2g^5(a+bx)^4}+\frac{35B^2d}{24b^2g^5(a+bx)^3}+\frac{7B^2d^2}{16b^2(bc-ad)g^5(a+bx)^2}$$

$$=-\frac{63B^2(bc-ad)}{32b^2g^5(a+bx)^4}+\frac{35B^2d}{24b^2g^5(a+bx)^3}+\frac{7B^2d^2}{16b^2(bc-ad)g^5(a+bx)^2}$$

Mathematica [C] time = 1.63, size = 1340, normalized size = 3.01

$$-\frac{i\left(216\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2(bc-ad)^4-288d(ad-bc)^3(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2+16Bd(a+bx)\left(12\left(A+\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g
*x)^5,x]
```

```
[Out] -1/864*(i*(216*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 288*d
*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 16*B*d
*(a + b*x)*(12*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 18*d*(b
*c - a*d)^2*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^2*(b*c -
a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^3*(a + b*x)^3*
Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 36*d^3*(a + b*x)^3*(A +
 B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 36*B*d^2*(a + b*x)^2*(b*c -
 a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - 9*B*d*(a + b*
x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a
+ b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*(2*(b*c - a*d)^3 - 3*d*(b*c
- a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[
a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3*(a + b*x)^3*(Log[a +
b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a
 + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*(a + b*x)^3*((2*Log[(d*(a + b*x))/(-(b
*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c
- a*d)])) + 3*B*(36*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 48
*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 72*d^2
*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 144*d^3*(
-(b*c) + a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 144*d^4*(a
 + b*x)^4*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 144*d^4*(a +
b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 144*B*d^3*(a + b
*x)^3*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + 3
6*B*d^2*(a + b*x)^2*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(
a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) - 8*B*d*(a + b*x)
*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*
x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) + 3
*B*(3*(b*c - a*d)^4 + 4*d*(-(b*c) + a*d)^3*(a + b*x) + 6*d^2*(b*c - a*d)^2*
(a + b*x)^2 + 12*d^3*(-(b*c) + a*d)*(a + b*x)^3 - 12*d^4*(a + b*x)^4*Log[a
+ b*x] + 12*d^4*(a + b*x)^4*Log[c + d*x]) + 72*B*d^4*(a + b*x)^4*(Log[a + b
*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a
+ b*x))/(-(b*c) + a*d)]) - 72*B*d^4*(a + b*x)^4*((2*Log[(d*(a + b*x))/(-(b*
c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c -
 a*d)]))))/(b^2*(b*c - a*d)^3*g^5*(a + b*x)^4)
```

fricas [B] time = 1.00, size = 985, normalized size = 2.21

$$-\frac{12\left(\left(12\,AB+13\,B^2\right)b^4cd^3-\left(12\,AB+13\,B^2\right)ab^3d^4\right)ix^3-6\left(\left(12\,AB+B^2\right)b^4c^2d^2-16\left(6\,AB+5\,B^2\right)ab^3cd^3+\left(84\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, algor
ithm="fricas")
```

```
[Out] -1/864*(12*((12*A*B + 13*B^2)*b^4*c*d^3 - (12*A*B + 13*B^2)*a*b^3*d^4)*i*x^
3 - 6*((12*A*B + B^2)*b^4*c^2*d^2 - 16*(6*A*B + 5*B^2)*a*b^3*c*d^3 + (84*A*
B + 79*B^2)*a^2*b^2*d^4)*i*x^2 + 4*((72*A^2 + 12*A*B - 5*B^2)*b^4*c^3*d - 1
2*(18*A^2 + 6*A*B - B^2)*a*b^3*c^2*d^2 + 108*(2*A^2 + 2*A*B + B^2)*a^2*b^2*
c*d^3 - (72*A^2 + 156*A*B + 115*B^2)*a^3*b*d^4)*i*x + 72*(B^2*b^4*d^4*i*x^4
```

```
 + 4*B^2*a*b^3*d^4*i*x^3 + 6*B^2*a^2*b^2*d^4*i*x^2 + 4*(B^2*b^4*c^3*d - 3*B
^2*a*b^3*c^2*d^2 + 3*B^2*a^2*b^2*c*d^3)*i*x + (3*B^2*b^4*c^4 - 8*B^2*a*b^3*
c^3*d + 6*B^2*a^2*b^2*c^2*d^2)*i)*log((b*e*x + a*e)/(d*x + c))^2 + (27*(8*A
^2 + 4*A*B + B^2)*b^4*c^4 - 64*(9*A^2 + 6*A*B + 2*B^2)*a*b^3*c^3*d + 216*(2
*A^2 + 2*A*B + B^2)*a^2*b^2*c^2*d^2 - (72*A^2 + 156*A*B + 115*B^2)*a^4*d^4)
*i + 12*((12*A*B + 13*B^2)*b^4*d^4*i*x^4 + 4*(3*B^2*b^4*c*d^3 + 2*(6*A*B +
5*B^2)*a*b^3*d^4)*i*x^3 - 6*(B^2*b^4*c^2*d^2 - 8*B^2*a*b^3*c*d^3 - 6*(2*A*B
 + B^2)*a^2*b^2*d^4)*i*x^2 + 4*((12*A*B + B^2)*b^4*c^3*d - 6*(6*A*B + B^2)*
a*b^3*c^2*d^2 + 18*(2*A*B + B^2)*a^2*b^2*c*d^3)*i*x + (9*(4*A*B + B^2)*b^4*
c^4 - 32*(3*A*B + B^2)*a*b^3*c^3*d + 36*(2*A*B + B^2)*a^2*b^2*c^2*d^2)*i)*l
og((b*e*x + a*e)/(d*x + c)))/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 -
a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a
^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 -
a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 -
 a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^
7*b^2*d^3)*g^5)
```

giac [A] time = 1.67, size = 727, normalized size = 1.63

$$-\frac{\left(216\,B^2b^2ie^5\log\left(\frac{bxe+ae}{dx+c}\right)^2-\frac{576\,(bxe+ae)B^2bdie^4\log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c}+\frac{432\,(bxe+ae)^2B^2d^2ie^3\log\left(\frac{bxe+ae}{dx+c}\right)^2}{(dx+c)^2}+432\,ABb^2ie^5\log\left(\frac{bxe+ae}{dx+c}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, algor
ithm="giac")
```

```
[Out] -1/864*(216*B^2*b^2*i*e^5*log((b*x*e + a*e)/(d*x + c))^2 - 576*(b*x*e + a*e
)*B^2*b*d*i*e^4*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 432*(b*x*e + a*e
)^2*B^2*d^2*i*e^3*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c)^2 + 432*A*B*b^2*
i*e^5*log((b*x*e + a*e)/(d*x + c)) + 108*B^2*b^2*i*e^5*log((b*x*e + a*e)/(d
*x + c)) - 1152*(b*x*e + a*e)*A*B*b*d*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d
*x + c) - 384*(b*x*e + a*e)*B^2*b*d*i*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x
 + c) + 864*(b*x*e + a*e)^2*A*B*d^2*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d*x
 + c)^2 + 432*(b*x*e + a*e)^2*B^2*d^2*i*e^3*log((b*x*e + a*e)/(d*x + c))/(d
*x + c)^2 + 216*A^2*b^2*i*e^5 + 108*A*B*b^2*i*e^5 + 27*B^2*b^2*i*e^5 - 576*
(b*x*e + a*e)*A^2*b*d*i*e^4/(d*x + c) - 384*(b*x*e + a*e)*A*B*b*d*i*e^4/(d*
x + c) - 128*(b*x*e + a*e)*B^2*b*d*i*e^4/(d*x + c) + 432*(b*x*e + a*e)^2*A^
2*d^2*i*e^3/(d*x + c)^2 + 432*(b*x*e + a*e)^2*A*B*d^2*i*e^3/(d*x + c)^2 + 2
16*(b*x*e + a*e)^2*B^2*d^2*i*e^3/(d*x + c)^2)*(b*c/((b*c*e - a*d*e)*(b*c -
a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^4*b^2*c^2*g^5/(d*
x + c)^4 - 2*(b*x*e + a*e)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x*e + a*e)^4*a^2*
d^2*g^5/(d*x + c)^4)
```

maple [B] time = 0.05, size = 2689, normalized size = 6.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^5,x)
```

```
[Out] -1/2*d^2*e^2*i/(a*d-b*c)^4/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
2*b*c-1/2*d^2*e^2*i/(a*d-b*c)^4/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/2*d*e^4*i/(a*d-b*c)^4/g^5*A*B*
b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*a-d^2*e^2*i/(a*d-b*c)^4/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-4/3*d^2*e^3*i/(a*d-b*c)^4/g^5*A*B*b/(
```

```
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-
2/3*d^2*e^3*i/(a*d-b*c)^4/g^5*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+2/3*d*e^3*i/(a*d-b*c)^4/g^5*B^2*b^2/
(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2
*c-4/9*d^2*e^3*i/(a*d-b*c)^4/g^5*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+4/9*d*e^3*i/(a*d-b*c)^4/g^5*B^2*b^2
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
c+d^3*e^2*i/(a*d-b*c)^4/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/4*d^3*e^2*i/(a*d-b*c)^4/g^5*B^2/(1/(d*x+
c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+1/2*d^3*e^2*i/(a*d-b*c)^4/g^5*A^2/(1/(d
*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/32*e^4*i/(a*d-b*c)^4/g^5*B^2*b^3/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c-1/4*e^4*i/(a*d-b*c)^4/g^5*A^2*b^
3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c-1/4*d^2*e^2*i/(a*d-b*c)^4/g^5
*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*b*c+4/27*d*e^3*i/(a*d-b*c)^4
/g^5*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c-4/27*d^2*e^3*i/(a*
d-b*c)^4/g^5*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+1/2*d^3*e^2*
i/(a*d-b*c)^4/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)*a+1/32*d*e^4*i/(a*d-b*c)^4/g^5*B^2*b^2/(1/(d*x+c)*a*e-
1/(d*x+c)*b*c/d*e+b/d*e)^4*a+4/9*d*e^3*i/(a*d-b*c)^4/g^5*A*B*b^2/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c+1/8*d*e^4*i/(a*d-b*c)^4/g^5*A*B*b^2/(1/(d
*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/2*e^4*i/(a*d-b*c)^4/g^5*A*B*b^3/(1
/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1
/4*d*e^4*i/(a*d-b*c)^4/g^5*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/2*d^2*e^2*i/(a*d-b*c)^4/g^5*B^2/(1/
(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*
c+1/8*d*e^4*i/(a*d-b*c)^4/g^5*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-4/9*d^2*e^3*i/(a*d-b*c)^4/g^5*A*B*b/
(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+1/2*d^3*e^2*i/(a*d-b*c)^4/g^5*B
^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)^2*a-1/4*e^4*i/(a*d-b*c)^4/g^5*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-1/8*e^4*i/(a*d-b*c)^4/g^5*B^2*b^
3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
*c-2/3*d^2*e^3*i/(a*d-b*c)^4/g^5*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^3*a+4/3*d*e^3*i/(a*d-b*c)^4/g^5*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*
e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/2*d^3*e^2*i/(a*d-b*c)^4/g^5*
A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-1/2*d^2*e^2*i/(a*d-b*c)^4/g
^5*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*b*c+2/3*d*e^3*i/(a*d-b*c)^
4/g^5*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c+1/4*d*e^4*i/(a*d-
b*c)^4/g^5*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/8*e^4*i/(a
*d-b*c)^4/g^5*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c
```

maxima [B] time = 5.05, size = 4808, normalized size = 10.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, algor
ithm="maxima")
```

```
[Out] -1/12*(4*b*x + a)*B^2*d*i*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^6*g^5*x
^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) +
 1/288*(12*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 +
 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^
2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*
d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d
^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*
d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2
*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)
*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 -
 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*b^
```

```
4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5))*log(b*e*x/
(d*x + c) + a*e/(d*x + c)) - (9*b^4*c^4 - 64*a*b^3*c^3*d + 216*a^2*b^2*c^2*
d^2 - 576*a^3*b*c*d^3 + 415*a^4*d^4 - 300*(b^4*c*d^3 - a*b^3*d^4)*x^3 + 6*(
13*b^4*c^2*d^2 - 176*a*b^3*c*d^3 + 163*a^2*b^2*d^4)*x^2 + 72*(b^4*d^4*x^4 +
 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a
)^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x
 + a^4*d^4)*log(d*x + c)^2 - 4*(7*b^4*c^3*d - 60*a*b^3*c^2*d^2 + 324*a^2*b^
2*c*d^3 - 271*a^3*b*d^4)*x - 300*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2
*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a) + 12*(25*b^4*d^4*x^4 + 100
*a*b^3*d^4*x^3 + 150*a^2*b^2*d^4*x^2 + 100*a^3*b*d^4*x + 25*a^4*d^4 - 12*(b
^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)
*log(b*x + a))*log(d*x + c))/(a^4*b^5*c^4*g^5 - 4*a^5*b^4*c^3*d*g^5 + 6*a^6
*b^3*c^2*d^2*g^5 - 4*a^7*b^2*c*d^3*g^5 + a^8*b*d^4*g^5 + (b^9*c^4*g^5 - 4*a
*b^8*c^3*d*g^5 + 6*a^2*b^7*c^2*d^2*g^5 - 4*a^3*b^6*c*d^3*g^5 + a^4*b^5*d^4*
g^5)*x^4 + 4*(a*b^8*c^4*g^5 - 4*a^2*b^7*c^3*d*g^5 + 6*a^3*b^6*c^2*d^2*g^5 -
 4*a^4*b^5*c*d^3*g^5 + a^5*b^4*d^4*g^5)*x^3 + 6*(a^2*b^7*c^4*g^5 - 4*a^3*b^
6*c^3*d*g^5 + 6*a^4*b^5*c^2*d^2*g^5 - 4*a^5*b^4*c*d^3*g^5 + a^6*b^3*d^4*g^5
)*x^2 + 4*(a^3*b^6*c^4*g^5 - 4*a^4*b^5*c^3*d*g^5 + 6*a^5*b^4*c^2*d^2*g^5 -
4*a^6*b^3*c*d^3*g^5 + a^7*b^2*d^4*g^5)*x))*B^2*c*i - 1/864*(12*((7*a*b^3*c^
3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^
3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^
4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x))/((b^9*c^3 - 3*
a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2
*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^
3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a
^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*
b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*lo
g(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3
+ a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^6*c^4 - 4*a*b
^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5))*log(b*e
*x/(d*x + c) + a*e/(d*x + c)) + (37*a*b^4*c^4 - 304*a^2*b^3*c^3*d + 1512*a^
3*b^2*c^2*d^2 - 1360*a^4*b*c*d^3 + 115*a^5*d^4 + 12*(88*b^5*c^2*d^2 - 101*a
*b^4*c*d^3 + 13*a^2*b^3*d^4)*x^3 - 6*(40*b^5*c^3*d - 609*a*b^4*c^2*d^2 + 64
8*a^2*b^3*c*d^3 - 79*a^3*b^2*d^4)*x^2 - 72*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^
5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b
^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*log(b*x +
a)^2 - 72*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a
*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(
4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*log(d*x + c)^2 + 4*(16*b^5*c^4 - 163*a*b^4*
c^3*d + 1068*a^2*b^3*c^2*d^2 - 1036*a^3*b^2*c*d^3 + 115*a^4*b*d^4)*x + 12*(
88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4)*x^4 + 4*(88*a*b
^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a^3*b^2*d^4)*x^2
+ 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x)*log(b*x + a) - 12*(88*a^4*b*c*d^3
- 13*a^5*d^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4)*x^4 + 4*(88*a*b^4*c*d^3 - 13*a
^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a^3*b^2*d^4)*x^2 + 4*(88*a^3*b^2
*c*d^3 - 13*a^4*b*d^4)*x - 12*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b
^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^
3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*log(b*x + a))*log(d*x +
 c))/(a^4*b^6*c^4*g^5 - 4*a^5*b^5*c^3*d*g^5 + 6*a^6*b^4*c^2*d^2*g^5 - 4*a^7
*b^3*c*d^3*g^5 + a^8*b^2*d^4*g^5 + (b^10*c^4*g^5 - 4*a*b^9*c^3*d*g^5 + 6*a^
2*b^8*c^2*d^2*g^5 - 4*a^3*b^7*c*d^3*g^5 + a^4*b^6*d^4*g^5)*x^4 + 4*(a*b^9*c
^4*g^5 - 4*a^2*b^8*c^3*d*g^5 + 6*a^3*b^7*c^2*d^2*g^5 - 4*a^4*b^6*c*d^3*g^5
+ a^5*b^5*d^4*g^5)*x^3 + 6*(a^2*b^8*c^4*g^5 - 4*a^3*b^7*c^3*d*g^5 + 6*a^4*b
^6*c^2*d^2*g^5 - 4*a^5*b^5*c*d^3*g^5 + a^6*b^4*d^4*g^5)*x^2 + 4*(a^3*b^7*c^
4*g^5 - 4*a^4*b^6*c^3*d*g^5 + 6*a^5*b^5*c^2*d^2*g^5 - 4*a^6*b^4*c*d^3*g^5 +
 a^7*b^3*d^4*g^5)*x))*B^2*d*i - 1/72*A*B*d*i*(12*(4*b*x + a)*log(b*e*x/(d*x
 + c) + a*e/(d*x + c))/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 +
 4*a^3*b^3*g^5*x + a^4*b^2*g^5) + (7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*
b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d -
```

```
29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^
2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2
- a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 -
 a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2
- a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2
 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 -
a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5
*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*
c*d^3 - a*d^4)*log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 -
 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5)) + 1/24*A*B*c*i*((12*b^3*d^3*x^3 - 3*b
^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*
b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 -
3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a
^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*
a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3
*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^
5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) - 12*log(b*e*x/(d*x + c) +
a*e/(d*x + c))/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b
^2*g^5*x + a^4*b*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a
^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((
b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*
g^5)) - 1/4*B^2*c*i*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^5*g^5*x^4 + 4
*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) - 1/12*(4
*b*x + a)*A^2*d*i/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^
3*b^3*g^5*x + a^4*b^2*g^5) - 1/4*A^2*c*i/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6
*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5)
```

mupad [B] time = 10.82, size = 1870, normalized size = 4.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^5,
x)
```

```
[Out] ((72*A^2*a^3*d^3*i + 216*A^2*b^3*c^3*i + 115*B^2*a^3*d^3*i + 27*B^2*b^3*c^3
*i + 156*A*B*a^3*d^3*i + 108*A*B*b^3*c^3*i - 360*A^2*a*b^2*c^2*d*i + 72*A^2
*a^2*b*c*d^2*i - 101*B^2*a*b^2*c^2*d*i + 115*B^2*a^2*b*c*d^2*i - 276*A*B*a*
b^2*c^2*d*i + 156*A*B*a^2*b*c*d^2*i)/(12*(a*d - b*c)) + (x^2*(79*B^2*a*b^2*
d^3*i - B^2*b^3*c*d^2*i + 84*A*B*a*b^2*d^3*i - 12*A*B*b^3*c*d^2*i))/(2*(a*d
 - b*c)) + (x*(72*A^2*a^2*b*d^3*i + 115*B^2*a^2*b*d^3*i + 72*A^2*b^3*c^2*d*
i - 5*B^2*b^3*c^2*d*i + 156*A*B*a^2*b*d^3*i + 12*A*B*b^3*c^2*d*i - 144*A^2*
a*b^2*c*d^2*i + 7*B^2*a*b^2*c*d^2*i - 60*A*B*a*b^2*c*d^2*i))/(3*(a*d - b*c)
) + (d*x^3*(13*B^2*b^3*d^2*i + 12*A*B*b^3*d^2*i))/(a*d - b*c))/(x*(288*a^3*
b^4*c*g^5 - 288*a^4*b^3*d*g^5) - x^3*(288*a^2*b^5*d*g^5 - 288*a*b^6*c*g^5)
+ x^4*(72*b^7*c*g^5 - 72*a*b^6*d*g^5) + x^2*(432*a^2*b^5*c*g^5 - 432*a^3*b^
4*d*g^5) + 72*a^4*b^3*c*g^5 - 72*a^5*b^2*d*g^5) - log((e*(a + b*x))/(c + d*
x))^2*(((B^2*c*i)/(4*b^2*g^5) + (B^2*a*d*i)/(12*b^3*g^5) + (B^2*d*i*x)/(3*b
^2*g^5))/(4*a^3*x + a^4/b + b^3*x^4 + 6*a^2*b*x^2 + 4*a*b^2*x^3) - (B^2*d^4
*i)/(12*b^2*g^5*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) - (lo
g((e*(a + b*x))/(c + d*x))*(x*((2*A*B*i)/(3*b^2*g^5) + (B^2*d^4*i*(b*(a*((4
*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (
6*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(12*b*d^4)) + a*(b*((
4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) +
(4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(6*d^3) + (a*(a*d - b*c))/(2*d^2)) + (6*a
^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(4*d^4)))/(6*b^2*g^5*(a^
3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) + (A*B*a*i)/(6*b^3*g^5)
+ (B*i*(3*A*b*c - B*a*d + B*b*c))/(6*b^3*d*g^5) + (B^2*d^4*i*(a*(a*((4*a^2*
d^2 + b^2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (6*a^3
*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(12*b*d^4)) + (4*a^4*d^4 +
```

```
 b^4*c^4 + 10*a^2*b^2*c^2*d^2 - 5*a*b^3*c^3*d - 10*a^3*b*c*d^3)/(4*b*d^5)))
/(6*b^2*g^5*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (B^2*d^4
*i*x^2*(b*(b*((4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c)
)/(4*b*d^2)) + (4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(6*d^3) + (a*(a*d - b*c))/
(2*d^2)) - a*((b^2*c - a*b*d)/(4*d^2) - (b*(a*d - b*c))/(2*d^2)) + (b^3*c^2
 + 4*a^2*b*d^2 - 5*a*b^2*c*d)/(4*d^3)))/(6*b^2*g^5*(a^3*d^3 - b^3*c^3 + 3*a
*b^2*c^2*d - 3*a^2*b*c*d^2)) - (B^2*d^4*i*x^3*(b*((b^2*c - a*b*d)/(4*d^2) -
 (b*(a*d - b*c))/(2*d^2)) + (b^3*c - a*b^2*d)/(4*d^2)))/(6*b^2*g^5*(a^3*d^3
 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))))/((4*a^3*x)/d + a^4/(b*d) + (
b^3*x^4)/d + (6*a^2*b*x^2)/d + (4*a*b^2*x^3)/d) - (B*d^4*i*atan((B*d^4*i*(1
2*A + 13*B)*(72*b^5*c^3*g^5 + 72*a^3*b^2*d^3*g^5 - 72*a*b^4*c^2*d*g^5 - 72*
a^2*b^3*c*d^2*g^5)*1i)/(72*b^2*g^5*(13*B^2*d^4*i + 12*A*B*d^4*i)*(a*d - b*c
)^3) + (B*d^5*i*x*(12*A + 13*B)*(b^4*c^2*g^5 + a^2*b^2*d^2*g^5 - 2*a*b^3*c*
d*g^5)*2i)/(b*g^5*(13*B^2*d^4*i + 12*A*B*d^4*i)*(a*d - b*c)^3))*(12*A + 13*
B)*1i)/(36*b^2*g^5*(a*d - b*c)^3)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**5,x)
[Out] Timed out
```

3.64 $\int (ag+bgx)^3(ci+dix)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx$

Optimal. Leaf size=711

$$-\frac{Bg^3i^2(bc-ad)^6\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(6B\log\left(\frac{e(a+bx)}{c+dx}\right)+6A+11B\right)}{180b^3d^4}-\frac{Bg^3i^2(a+bx)(bc-ad)^5\left(6B\log\left(\frac{e(a+bx)}{c+dx}\right)+6A+5\right.}{180b^3d^3}$$

```
[Out] 3/20*B^2*(-a*d+b*c)^5*g^3*i^2*x/b^2/d^3+1/60*B^2*(-a*d+b*c)^2*g^3*i^2*(b*x+
a)^4/b^3-3/40*B^2*(-a*d+b*c)^4*g^3*i^2*(d*x+c)^2/b/d^4+1/60*B^2*(-a*d+b*c)^
3*g^3*i^2*(d*x+c)^3/d^4-1/90*B*(-a*d+b*c)^3*g^3*i^2*(b*x+a)^3*(A+B*ln(e*(b*
x+a)/(d*x+c)))/b^3/d-1/20*B*(-a*d+b*c)^2*g^3*i^2*(b*x+a)^4*(A+B*ln(e*(b*x+a
)/(d*x+c)))/b^3-1/15*B*(-a*d+b*c)*g^3*i^2*(b*x+a)^4*(d*x+c)*(A+B*ln(e*(b*x+
a)/(d*x+c)))/b^2+1/60*(-a*d+b*c)^2*g^3*i^2*(b*x+a)^4*(A+B*ln(e*(b*x+a)/(d*x
+c)))^2/b^3+1/15*(-a*d+b*c)*g^3*i^2*(b*x+a)^4*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*
x+c)))^2/b^2+1/6*g^3*i^2*(b*x+a)^4*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/
b+1/180*B*(-a*d+b*c)^4*g^3*i^2*(b*x+a)^2*(3*A+B+3*B*ln(e*(b*x+a)/(d*x+c)))/
b^3/d^2-1/180*B*(-a*d+b*c)^5*g^3*i^2*(b*x+a)*(6*A+5*B+6*B*ln(e*(b*x+a)/(d*x
+c)))/b^3/d^3-1/180*B*(-a*d+b*c)^6*g^3*i^2*ln((-a*d+b*c)/b/(d*x+c))*(6*A+11
*B+6*B*ln(e*(b*x+a)/(d*x+c)))/b^3/d^4-1/20*B^2*(-a*d+b*c)^6*g^3*i^2*ln(d*x+
c)/b^3/d^4-1/30*B^2*(-a*d+b*c)^6*g^3*i^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^3
/d^4
```

Rubi [A] time = 3.01, antiderivative size = 790, normalized size of antiderivative = 1.11, number of steps used = 86, number of rules used = 13, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.310, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{B^2g^3i^2(bc-ad)^6\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{30b^3d^4}+\frac{Bg^3i^2(bc-ad)^6\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{30b^3d^4}+\frac{Bg^3i^2(a+bx)^2(bc-a}{60}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,
x]
```

```
[Out] -(A*B*(b*c - a*d)^5*g^3*i^2*x)/(30*b^2*d^3) + (B^2*(b*c - a*d)^5*g^3*i^2*x)
/(45*b^2*d^3) - (7*B^2*(b*c - a*d)^4*g^3*i^2*(a + b*x)^2)/(360*b^3*d^2) + (
B^2*(b*c - a*d)^3*g^3*i^2*(a + b*x)^3)/(60*b^3*d) + (B^2*(b*c - a*d)^2*g^3*
i^2*(a + b*x)^4)/(60*b^3) - (B^2*(b*c - a*d)^5*g^3*i^2*(a + b*x)*Log[(e*(a
+ b*x))/(c + d*x)])/(30*b^3*d^3) + (B*(b*c - a*d)^4*g^3*i^2*(a + b*x)^2*(A
+ B*Log[(e*(a + b*x))/(c + d*x)]))/(60*b^3*d^2) - (B*(b*c - a*d)^3*g^3*i^2*
(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(90*b^3*d) - (7*B*(b*c -
a*d)^2*g^3*i^2*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(60*b^3) -
 (B*d*(b*c - a*d)*g^3*i^2*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]))
/(15*b^3) + ((b*c - a*d)^2*g^3*i^2*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c
+ d*x)])^2)/(4*b^3) + (2*d*(b*c - a*d)*g^3*i^2*(a + b*x)^5*(A + B*Log[(e*(a
 + b*x))/(c + d*x)])^2)/(5*b^3) + (d^2*g^3*i^2*(a + b*x)^6*(A + B*Log[(e*(a
 + b*x))/(c + d*x)])^2)/(6*b^3) + (B^2*(b*c - a*d)^6*g^3*i^2*Log[c + d*x])/
(90*b^3*d^4) - (B^2*(b*c - a*d)^6*g^3*i^2*Log[-((d*(a + b*x))/(b*c - a*d))]
*Log[c + d*x])/(30*b^3*d^4) + (B*(b*c - a*d)^6*g^3*i^2*(A + B*Log[(e*(a + b
*x))/(c + d*x)])*Log[c + d*x])/(30*b^3*d^4) + (B^2*(b*c - a*d)^6*g^3*i^2*Lo
g[c + d*x]^2)/(60*b^3*d^4) - (B^2*(b*c - a*d)^6*g^3*i^2*PolyLog[2, (b*(c +
d*x))/(b*c - a*d)])/(30*b^3*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (64c+64dx)^2(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx = \int\left(\frac{4096(bc-ad)^2(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{b^2}\right.$$

$$= \frac{\left(4096(bc-ad)^2\right)\int (ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{b^2}$$

$$= \frac{1024(bc-ad)^2g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3}$$

$$= \frac{1024(bc-ad)^2g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3}$$

$$= \frac{1024(bc-ad)^2g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3}$$

$$= \frac{1024(bc-ad)^2g^3(a+bx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3}$$

$$= -\frac{2048AB(bc-ad)^5g^3x}{15b^2d^3} + \frac{1024B(bc-ad)^4g^3(a+}{15}$$

$$= -\frac{2048AB(bc-ad)^5g^3x}{15b^2d^3} - \frac{2048B^2(bc-ad)^5g^3(a-}{15b^3d^3}$$

$$= -\frac{2048AB(bc-ad)^5g^3x}{15b^2d^3} - \frac{2048B^2(bc-ad)^5g^3(a-}{15b^3d^3}$$

$$= -\frac{2048AB(bc-ad)^5g^3x}{15b^2d^3} + \frac{4096B^2(bc-ad)^5g^3x}{45b^2d^3} -$$

$$= -\frac{2048AB(bc-ad)^5g^3x}{15b^2d^3} + \frac{4096B^2(bc-ad)^5g^3x}{45b^2d^3} -$$

$$= -\frac{2048AB(bc-ad)^5g^3x}{15b^2d^3} + \frac{4096B^2(bc-ad)^5g^3x}{45b^2d^3} -$$

$$= -\frac{2048AB(bc-ad)^5g^3x}{15b^2d^3} + \frac{4096B^2(bc-ad)^5g^3x}{45b^2d^3} -$$

Mathematica [B] time = 1.37, size = 1559, normalized size = 2.19

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x
)])^2,x]
```

```
[Out] (g^3*i^2*(15*(b*c - a*d)^2*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])
^2 + 24*d*(b*c - a*d)*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 +
10*d^2*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (5*B*(b*c - a*d
```

```
)^3*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*
x))/(c + d*x)] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/
(c + d*x)]) + 2*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*
(b*c - a*d)^3*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c +
d*x)])*Log[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2
 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (-(b*c) + a*d)
*Log[c + d*x]) + 3*B*(b*c - a*d)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] -
Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^4
 + (2*B*(b*c - a*d)^2*(24*A*b*d*(b*c - a*d)^3*x + 24*B*d*(b*c - a*d)^3*(a +
 b*x)*Log[(e*(a + b*x))/(c + d*x)] - 12*d^2*(b*c - a*d)^2*(a + b*x)^2*(A +
B*Log[(e*(a + b*x))/(c + d*x)]) + 8*d^3*(b*c - a*d)*(a + b*x)^3*(A + B*Log[
(e*(a + b*x))/(c + d*x)]) - 6*d^4*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c +
 d*x)]) - 24*B*(b*c - a*d)^4*Log[c + d*x] - 24*(b*c - a*d)^4*(A + B*Log[(e*
(a + b*x))/(c + d*x)])*Log[c + d*x] + 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*
x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + B*(b*c - a*d)*(6*b*d*
(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*
(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^3*(b*d*x + (-(b*c) + a*d)*Lo
g[c + d*x]) + 12*B*(b*c - a*d)^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Lo
g[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^4 -
 (B*(b*c - a*d)*(24*b^2*B*c*d*(b*c - a*d)^3*x + 120*A*b*d*(b*c - a*d)^4*x +
 130*b*B*d*(b*c - a*d)^4*x + 24*a*b*B*d^2*(-(b*c) + a*d)^3*x - 12*b*B*c*d^2
*(b*c - a*d)^2*(a + b*x)^2 + 12*a*B*d^3*(b*c - a*d)^2*(a + b*x)^2 + 35*B*d^
2*(-(b*c) + a*d)^3*(a + b*x)^2 + 8*b*B*c*d^3*(b*c - a*d)*(a + b*x)^3 + 10*B
*d^3*(b*c - a*d)^2*(a + b*x)^3 + 8*a*B*d^4*(-(b*c) + a*d)*(a + b*x)^3 - 6*b
*B*c*d^4*(a + b*x)^4 + 6*a*B*d^5*(a + b*x)^4 + 120*B*d*(b*c - a*d)^4*(a + b
*x)*Log[(e*(a + b*x))/(c + d*x)] + 60*d^2*(-(b*c) + a*d)^3*(a + b*x)^2*(A +
 B*Log[(e*(a + b*x))/(c + d*x)]) + 40*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*
Log[(e*(a + b*x))/(c + d*x)]) + 30*d^4*(-(b*c) + a*d)*(a + b*x)^4*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]) + 24*d^5*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(
c + d*x)]) - 24*b*B*c*(b*c - a*d)^4*Log[c + d*x] + 24*a*B*d*(b*c - a*d)^4*L
og[c + d*x] - 250*B*(b*c - a*d)^5*Log[c + d*x] - 120*(b*c - a*d)^5*(A + B*L
og[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 60*B*(b*c - a*d)^5*((2*Log[(d*(
a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c
 + d*x))/(b*c - a*d)])))/(6*d^4)))/(60*b^3)
```

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2b^3d^2g^3i^2x^5 + A^2a^3c^2g^3i^2 + \left(2\,A^2b^3cd + 3\,A^2ab^2d^2\right)g^3i^2x^4 + \left(A^2b^3c^2 + 6\,A^2ab^2cd + 3\,A^2a^2bd^2\right)g^3i^2x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="fricas")
```

```
[Out] integral(A^2*b^3*d^2*g^3*i^2*x^5 + A^2*a^3*c^2*g^3*i^2 + (2*A^2*b^3*c*d + 3
*A^2*a*b^2*d^2)*g^3*i^2*x^4 + (A^2*b^3*c^2 + 6*A^2*a*b^2*c*d + 3*A^2*a^2*b*
d^2)*g^3*i^2*x^3 + (3*A^2*a*b^2*c^2 + 6*A^2*a^2*b*c*d + A^2*a^3*d^2)*g^3*i^
2*x^2 + (3*A^2*a^2*b*c^2 + 2*A^2*a^3*c*d)*g^3*i^2*x + (B^2*b^3*d^2*g^3*i^2*
x^5 + B^2*a^3*c^2*g^3*i^2 + (2*B^2*b^3*c*d + 3*B^2*a*b^2*d^2)*g^3*i^2*x^4 +
 (B^2*b^3*c^2 + 6*B^2*a*b^2*c*d + 3*B^2*a^2*b*d^2)*g^3*i^2*x^3 + (3*B^2*a*b
^2*c^2 + 6*B^2*a^2*b*c*d + B^2*a^3*d^2)*g^3*i^2*x^2 + (3*B^2*a^2*b*c^2 + 2*
B^2*a^3*c*d)*g^3*i^2*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^3*d^2*g^3
*i^2*x^5 + A*B*a^3*c^2*g^3*i^2 + (2*A*B*b^3*c*d + 3*A*B*a*b^2*d^2)*g^3*i^2*
x^4 + (A*B*b^3*c^2 + 6*A*B*a*b^2*c*d + 3*A*B*a^2*b*d^2)*g^3*i^2*x^3 + (3*A*
B*a*b^2*c^2 + 6*A*B*a^2*b*c*d + A*B*a^3*d^2)*g^3*i^2*x^2 + (3*A*B*a^2*b*c^2
 + 2*A*B*a^3*c*d)*g^3*i^2*x)*log((b*e*x + a*e)/(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.86, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{3} \left(dix+ci\right)^{2} \left(B \ln \left(\frac{\left(bx+a\right) e}{dx+c}\right)+A\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 2.99, size = 5178, normalized size = 7.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="maxima")
```

```
[Out] 1/6*A^2*b^3*d^2*g^3*i^2*x^6 + 2/5*A^2*b^3*c*d*g^3*i^2*x^5 + 3/5*A^2*a*b^2*d
^2*g^3*i^2*x^5 + 1/4*A^2*b^3*c^2*g^3*i^2*x^4 + 3/2*A^2*a*b^2*c*d*g^3*i^2*x^
4 + 3/4*A^2*a^2*b*d^2*g^3*i^2*x^4 + A^2*a*b^2*c^2*g^3*i^2*x^3 + 2*A^2*a^2*b
*c*d*g^3*i^2*x^3 + 1/3*A^2*a^3*d^2*g^3*i^2*x^3 + 3/2*A^2*a^2*b*c^2*g^3*i^2*
x^2 + A^2*a^3*c*d*g^3*i^2*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) +
 a*log(b*x + a)/b - c*log(d*x + c)/d)*A*B*a^3*c^2*g^3*i^2 + 3*(x^2*log(b*e*
x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2
- (b*c - a*d)*x/(b*d))*A*B*a^2*b*c^2*g^3*i^2 + (2*x^3*log(b*e*x/(d*x + c) +
 a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c
*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*b^2*c^2*g^3*i
^2 + 1/12*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/
b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*
d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*b^3*c^2*g^3*i^
2 + 2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^
2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a^3*c*d*g^3*i^2 + 2*(2*x^3*lo
g(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x
 + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*
A*B*a^2*b*c*d*g^3*i^2 + 1/2*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6
*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)
*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*
A*B*a*b^2*c*d*g^3*i^2 + 1/15*(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) +
 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*
d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^
2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*A*B*b^3*c*d*g^3*i^2 + 1/3*(2*x^3*l
og(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*
x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))
*A*B*a^3*d^2*g^3*i^2 + 1/4*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*
a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*
x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A
*B*a^2*b*d^2*g^3*i^2 + 1/10*(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) +
12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d
^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2
 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*A*B*a*b^2*d^2*g^3*i^2 + 1/180*(60*x
^6*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 60*a^6*log(b*x + a)/b^6 + 60*c^6*
log(d*x + c)/d^6 - (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*
```

```
b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d
^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5))*A*B*b^3*d^2*g^3*i^2 + A^2*a^
3*c^2*g^3*i^2*x - 1/180*(33*a^4*b*c^2*d^4*g^3*i^2 - 6*a^5*c*d^5*g^3*i^2 - 2
*(3*g^3*i^2*log(e) + g^3*i^2)*b^5*c^6 + 6*(6*g^3*i^2*log(e) + g^3*i^2)*a*b^
4*c^5*d - 3*(30*g^3*i^2*log(e) - g^3*i^2)*a^2*b^3*c^4*d^2 + 2*(60*g^3*i^2*l
og(e) - 17*g^3*i^2)*a^3*b^2*c^3*d^3)*B^2*log(d*x + c)/(b^2*d^4) + 1/30*(b^6
*c^6*g^3*i^2 - 6*a*b^5*c^5*d*g^3*i^2 + 15*a^2*b^4*c^4*d^2*g^3*i^2 - 20*a^3*
b^3*c^3*d^3*g^3*i^2 + 15*a^4*b^2*c^2*d^4*g^3*i^2 - 6*a^5*b*c*d^5*g^3*i^2 +
a^6*d^6*g^3*i^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-
(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^3*d^4) + 1/360*(60*B^2*b^6*d^6*g^3*i^2*x
^6*log(e)^2 + 24*((6*g^3*i^2*log(e)^2 - g^3*i^2*log(e))*b^6*c*d^5 + (9*g^3*
i^2*log(e)^2 + g^3*i^2*log(e))*a*b^5*d^6)*B^2*x^5 + 6*((15*g^3*i^2*log(e)^2
 - 7*g^3*i^2*log(e) + g^3*i^2)*b^6*c^2*d^4 + 2*(45*g^3*i^2*log(e)^2 - 3*g^3
*i^2*log(e) - g^3*i^2)*a*b^5*c*d^5 + (45*g^3*i^2*log(e)^2 + 13*g^3*i^2*log(
e) + g^3*i^2)*a^2*b^4*d^6)*B^2*x^4 - 2*((2*g^3*i^2*log(e) - 3*g^3*i^2)*b^6*
c^3*d^3 - 3*(60*g^3*i^2*log(e)^2 - 26*g^3*i^2*log(e) + g^3*i^2)*a*b^5*c^2*d
^4 - 3*(120*g^3*i^2*log(e)^2 + 14*g^3*i^2*log(e) - 5*g^3*i^2)*a^2*b^4*c*d^5
 - (60*g^3*i^2*log(e)^2 + 38*g^3*i^2*log(e) + 9*g^3*i^2)*a^3*b^3*d^6)*B^2*x
^3 + ((6*g^3*i^2*log(e) - 7*g^3*i^2)*b^6*c^4*d^2 - 2*(18*g^3*i^2*log(e) - 2
3*g^3*i^2)*a*b^5*c^3*d^3 + 60*(9*g^3*i^2*log(e)^2 - 3*g^3*i^2*log(e) - g^3*
i^2)*a^2*b^4*c^2*d^4 + 2*(180*g^3*i^2*log(e)^2 + 102*g^3*i^2*log(e) + 5*g^3
*i^2)*a^3*b^3*c*d^5 + (6*g^3*i^2*log(e) + 11*g^3*i^2)*a^4*b^2*d^6)*B^2*x^2
 - 2*(2*(3*g^3*i^2*log(e) - 2*g^3*i^2)*b^6*c^5*d - 9*(4*g^3*i^2*log(e) - 3*g
^3*i^2)*a*b^5*c^4*d^2 + (90*g^3*i^2*log(e) - 77*g^3*i^2)*a^2*b^4*c^3*d^3 -
(180*g^3*i^2*log(e)^2 + 30*g^3*i^2*log(e) - 97*g^3*i^2)*a^3*b^3*c^2*d^4 - 3
*(12*g^3*i^2*log(e) + 17*g^3*i^2)*a^4*b^2*c*d^5 + 2*(3*g^3*i^2*log(e) + 4*g
^3*i^2)*a^5*b*d^6)*B^2*x + 6*(10*B^2*b^6*d^6*g^3*i^2*x^6 + 60*B^2*a^3*b^3*c
^2*d^4*g^3*i^2*x + 12*(2*b^6*c*d^5*g^3*i^2 + 3*a*b^5*d^6*g^3*i^2)*B^2*x^5 +
 15*(b^6*c^2*d^4*g^3*i^2 + 6*a*b^5*c*d^5*g^3*i^2 + 3*a^2*b^4*d^6*g^3*i^2)*B
^2*x^4 + 20*(3*a*b^5*c^2*d^4*g^3*i^2 + 6*a^2*b^4*c*d^5*g^3*i^2 + a^3*b^3*d^
6*g^3*i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3*i^2 + 2*a^3*b^3*c*d^5*g^3*i^
2)*B^2*x^2 + (15*a^4*b^2*c^2*d^4*g^3*i^2 - 6*a^5*b*c*d^5*g^3*i^2 + a^6*d^6*
g^3*i^2)*B^2)*log(b*x + a)^2 + 6*(10*B^2*b^6*d^6*g^3*i^2*x^6 + 60*B^2*a^3*b
^3*c^2*d^4*g^3*i^2*x + 12*(2*b^6*c*d^5*g^3*i^2 + 3*a*b^5*d^6*g^3*i^2)*B^2*x
^5 + 15*(b^6*c^2*d^4*g^3*i^2 + 6*a*b^5*c*d^5*g^3*i^2 + 3*a^2*b^4*d^6*g^3*i^
2)*B^2*x^4 + 20*(3*a*b^5*c^2*d^4*g^3*i^2 + 6*a^2*b^4*c*d^5*g^3*i^2 + a^3*b^
3*d^6*g^3*i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3*i^2 + 2*a^3*b^3*c*d^5*g^
3*i^2)*B^2*x^2 - (b^6*c^6*g^3*i^2 - 6*a*b^5*c^5*d*g^3*i^2 + 15*a^2*b^4*c^4*
d^2*g^3*i^2 - 20*a^3*b^3*c^3*d^3*g^3*i^2)*B^2)*log(d*x + c)^2 + 2*(60*B^2*b
^6*d^6*g^3*i^2*x^6*log(e) + 12*((12*g^3*i^2*log(e) - g^3*i^2)*b^6*c*d^5 + (
18*g^3*i^2*log(e) + g^3*i^2)*a*b^5*d^6)*B^2*x^5 + 3*((30*g^3*i^2*log(e) - 7
*g^3*i^2)*b^6*c^2*d^4 + 6*(30*g^3*i^2*log(e) - g^3*i^2)*a*b^5*c*d^5 + (90*g
^3*i^2*log(e) + 13*g^3*i^2)*a^2*b^4*d^6)*B^2*x^4 - 2*(b^6*c^3*d^3*g^3*i^2 -
 3*(60*g^3*i^2*log(e) - 13*g^3*i^2)*a*b^5*c^2*d^4 - 3*(120*g^3*i^2*log(e) +
 7*g^3*i^2)*a^2*b^4*c*d^5 - (60*g^3*i^2*log(e) + 19*g^3*i^2)*a^3*b^3*d^6)*B
^2*x^3 + 3*(b^6*c^4*d^2*g^3*i^2 - 6*a*b^5*c^3*d^3*g^3*i^2 + a^4*b^2*d^6*g^3
*i^2 + 30*(6*g^3*i^2*log(e) - g^3*i^2)*a^2*b^4*c^2*d^4 + 2*(60*g^3*i^2*log(
e) + 17*g^3*i^2)*a^3*b^3*c*d^5)*B^2*x^2 - 6*(b^6*c^5*d*g^3*i^2 - 6*a*b^5*c^
4*d^2*g^3*i^2 + 15*a^2*b^4*c^3*d^3*g^3*i^2 - 6*a^4*b^2*c*d^5*g^3*i^2 + a^5*
b*d^6*g^3*i^2 - 5*(12*g^3*i^2*log(e) + g^3*i^2)*a^3*b^3*c^2*d^4)*B^2*x - (6
*a*b^5*c^5*d*g^3*i^2 - 33*a^2*b^4*c^4*d^2*g^3*i^2 + 74*a^3*b^3*c^3*d^3*g^3*
i^2 - 9*(10*g^3*i^2*log(e) + 7*g^3*i^2)*a^4*b^2*c^2*d^4 + 18*(2*g^3*i^2*log
(e) + g^3*i^2)*a^5*b*c*d^5 - 2*(3*g^3*i^2*log(e) + g^3*i^2)*a^6*d^6)*B^2)*l
og(b*x + a) - 2*(60*B^2*b^6*d^6*g^3*i^2*x^6*log(e) + 12*((12*g^3*i^2*log(e)
 - g^3*i^2)*b^6*c*d^5 + (18*g^3*i^2*log(e) + g^3*i^2)*a*b^5*d^6)*B^2*x^5 +
3*((30*g^3*i^2*log(e) - 7*g^3*i^2)*b^6*c^2*d^4 + 6*(30*g^3*i^2*log(e) - g^3
*i^2)*a*b^5*c*d^5 + (90*g^3*i^2*log(e) + 13*g^3*i^2)*a^2*b^4*d^6)*B^2*x^4 -
 2*(b^6*c^3*d^3*g^3*i^2 - 3*(60*g^3*i^2*log(e) - 13*g^3*i^2)*a*b^5*c^2*d^4
- 3*(120*g^3*i^2*log(e) + 7*g^3*i^2)*a^2*b^4*c*d^5 - (60*g^3*i^2*log(e) + 1
```

```
9*g^3*i^2)*a^3*b^3*d^6)*B^2*x^3 + 3*(b^6*c^4*d^2*g^3*i^2 - 6*a*b^5*c^3*d^3*
g^3*i^2 + a^4*b^2*d^6*g^3*i^2 + 30*(6*g^3*i^2*log(e) - g^3*i^2)*a^2*b^4*c^2
*d^4 + 2*(60*g^3*i^2*log(e) + 17*g^3*i^2)*a^3*b^3*c*d^5)*B^2*x^2 - 6*(b^6*c
^5*d*g^3*i^2 - 6*a*b^5*c^4*d^2*g^3*i^2 + 15*a^2*b^4*c^3*d^3*g^3*i^2 - 6*a^4
*b^2*c*d^5*g^3*i^2 + a^5*b*d^6*g^3*i^2 - 5*(12*g^3*i^2*log(e) + g^3*i^2)*a^
3*b^3*c^2*d^4)*B^2*x + 6*(10*B^2*b^6*d^6*g^3*i^2*x^6 + 60*B^2*a^3*b^3*c^2*d
^4*g^3*i^2*x + 12*(2*b^6*c*d^5*g^3*i^2 + 3*a*b^5*d^6*g^3*i^2)*B^2*x^5 + 15*
(b^6*c^2*d^4*g^3*i^2 + 6*a*b^5*c*d^5*g^3*i^2 + 3*a^2*b^4*d^6*g^3*i^2)*B^2*x
^4 + 20*(3*a*b^5*c^2*d^4*g^3*i^2 + 6*a^2*b^4*c*d^5*g^3*i^2 + a^3*b^3*d^6*g^
3*i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3*i^2 + 2*a^3*b^3*c*d^5*g^3*i^2)*B
^2*x^2 + (15*a^4*b^2*c^2*d^4*g^3*i^2 - 6*a^5*b*c*d^5*g^3*i^2 + a^6*d^6*g^3*
i^2)*B^2)*log(b*x + a))*log(d*x + c))/(b^3*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a g + b g x\right)^3 (c i + d i x)^2 \left(A + B \ln\left(\frac{e\ (a + b x)}{c + d x}\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
x)
```

```
[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

3.65 $\int (ag+bgx)^2(ci+dix)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx$

Optimal. Leaf size=761

$$\frac{Bg^2i^2(bc-ad)^5\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(2B\log\left(\frac{e(a+bx)}{c+dx}\right)+2A+3B\right)}{30b^3d^3}+\frac{Bg^2i^2(a+bx)(bc-ad)^4\left(2B\log\left(\frac{e(a+bx)}{c+dx}\right)+2A+B\right)}{30b^3d^2}-$$

```
[Out] -1/10*B^2*(-a*d+b*c)^4*g^2*i^2*x/b^2/d^2-1/20*B^2*(-a*d+b*c)^3*g^2*i^2*(d*x
+c)^2/b/d^3+1/30*B^2*(-a*d+b*c)^2*g^2*i^2*(d*x+c)^3/d^3+1/30*B^2*(-a*d+b*c)
^5*g^2*i^2*ln((b*x+a)/(d*x+c))/b^3/d^3-1/30*B*(-a*d+b*c)^3*g^2*i^2*(b*x+a)^
2*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^3/d-1/15*B*(-a*d+b*c)^2*g^2*i^2*(b*x+a)^3*(
A+B*ln(e*(b*x+a)/(d*x+c)))/b^3-1/5*B*(-a*d+b*c)^3*g^2*i^2*(d*x+c)^2*(A+B*ln
(e*(b*x+a)/(d*x+c)))/b/d^3+4/15*B*(-a*d+b*c)^2*g^2*i^2*(d*x+c)^3*(A+B*ln(e*
(b*x+a)/(d*x+c)))/d^3-1/10*b*B*(-a*d+b*c)*g^2*i^2*(d*x+c)^4*(A+B*ln(e*(b*x+
a)/(d*x+c)))/d^3+1/30*(-a*d+b*c)^2*g^2*i^2*(b*x+a)^3*(A+B*ln(e*(b*x+a)/(d*x
+c)))^2/b^3+1/10*(-a*d+b*c)*g^2*i^2*(b*x+a)^3*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*
x+c)))^2/b^2+1/5*g^2*i^2*(b*x+a)^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/
b+1/30*B*(-a*d+b*c)^4*g^2*i^2*(b*x+a)*(2*A+B+2*B*ln(e*(b*x+a)/(d*x+c)))/b^3
/d^2+1/30*B*(-a*d+b*c)^5*g^2*i^2*ln((-a*d+b*c)/b/(d*x+c))*(2*A+3*B+2*B*ln(e
*(b*x+a)/(d*x+c)))/b^3/d^3+1/10*B^2*(-a*d+b*c)^5*g^2*i^2*ln(d*x+c)/b^3/d^3+
1/15*B^2*(-a*d+b*c)^5*g^2*i^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^3/d^3
```

Rubi [A] time = 2.40, antiderivative size = 666, normalized size of antiderivative = 0.88, number of steps used = 74, number of rules used = 13, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.310, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^2i^2(bc-ad)^5\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{15b^3d^3}-\frac{Bg^2i^2(bc-ad)^5\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{15b^3d^3}+\frac{d^2g^2i^2(a+bx)^5\left(B\log\left(\right.\right.}{5b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,
x]
```

```
[Out] (A*B*(b*c - a*d)^4*g^2*i^2*x)/(15*b^2*d^2) - (B^2*(b*c - a*d)^4*g^2*i^2*x)/
(15*b^2*d^2) + (B^2*(b*c - a*d)^3*g^2*i^2*(a + b*x)^2)/(20*b^3*d) + (B^2*(b
*c - a*d)^2*g^2*i^2*(a + b*x)^3)/(30*b^3) + (B^2*(b*c - a*d)^4*g^2*i^2*(a +
 b*x)*Log[(e*(a + b*x))/(c + d*x)])/(15*b^3*d^2) - (B*(b*c - a*d)^3*g^2*i^2
*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(30*b^3*d) - (B*(b*c - a
*d)^2*g^2*i^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(5*b^3) - (
B*d*(b*c - a*d)*g^2*i^2*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(
10*b^3) + ((b*c - a*d)^2*g^2*i^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c +
d*x)])^2)/(3*b^3) + (d*(b*c - a*d)*g^2*i^2*(a + b*x)^4*(A + B*Log[(e*(a + b
*x))/(c + d*x)])^2)/(2*b^3) + (d^2*g^2*i^2*(a + b*x)^5*(A + B*Log[(e*(a + b
*x))/(c + d*x)])^2)/(5*b^3) + (B^2*(b*c - a*d)^5*g^2*i^2*Log[-((d*(a + b*x)
)/(b*c - a*d))]*Log[c + d*x])/(15*b^3*d^3) - (B*(b*c - a*d)^5*g^2*i^2*(A +
B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(15*b^3*d^3) - (B^2*(b*c - a*
d)^5*g^2*i^2*Log[c + d*x]^2)/(30*b^3*d^3) + (B^2*(b*c - a*d)^5*g^2*i^2*Poly
Log[2, (b*(c + d*x))/(b*c - a*d)])/(15*b^3*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (65c+65dx)^2(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx=\int\left(\frac{(-bc+ad)^2g^2(65c+65dx)^2\left(A+B\log\left(\frac{e(a+b}{c+d}\right.\right.}{d^2}\right.$$

$$=\frac{(b^2g^2)\int(65c+65dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx}{4225d^2}$$

$$=\frac{4225(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3d^3}$$

$$=\frac{4225(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3d^3}$$

$$=\frac{4225(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3d^3}$$

$$=\frac{4225(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3d^3}$$

$$=-\frac{845AB(bc-ad)^4g^2x}{3b^2d^2}-\frac{845B(bc-ad)^3g^2(c+dx}{6b}$$

$$=-\frac{845AB(bc-ad)^4g^2x}{3b^2d^2}-\frac{845B^2(bc-ad)^4g^2(a+b}{3b^3d^2}$$

$$=-\frac{845AB(bc-ad)^4g^2x}{3b^2d^2}-\frac{845B^2(bc-ad)^4g^2(a+b}{3b^3d^2}$$

$$=-\frac{845AB(bc-ad)^4g^2x}{3b^2d^2}-\frac{845B^2(bc-ad)^4g^2x}{3b^2d^2}-\frac{8}{}$$

$$=-\frac{845AB(bc-ad)^4g^2x}{3b^2d^2}-\frac{845B^2(bc-ad)^4g^2x}{3b^2d^2}-\frac{8}{}$$

$$=-\frac{845AB(bc-ad)^4g^2x}{3b^2d^2}-\frac{845B^2(bc-ad)^4g^2x}{3b^2d^2}-\frac{8}{}$$

$$=-\frac{845AB(bc-ad)^4g^2x}{3b^2d^2}-\frac{845B^2(bc-ad)^4g^2x}{3b^2d^2}-\frac{8}{}$$

Mathematica [A] time = 0.95, size = 1194, normalized size = 1.57

$$\frac{g^2i^2\left(12d^5\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2(a+bx)^5+30d^4(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2(a+bx)^4+20d^3(bc-ad)^2\right(}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x
)])^2,x]
```

```
[Out] (g^2*i^2*(20*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*
x)])^2 + 30*d^4*(b*c - a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]
```

```
)^2 + 12*d^5*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 20*B*(b*c
 - a*d)^3*(2*A*b*d*(b*c - a*d)*x + 2*B*d*(b*c - a*d)*(a + b*x)*Log[(e*(a +
b*x))/(c + d*x)] - d^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2
*B*(b*c - a*d)^2*Log[c + d*x] - 2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c
 + d*x)])*Log[c + d*x] + B*(b*c - a*d)*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]
) + B*(b*c - a*d)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*L
og[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) - 10*B*(b*c - a*d)^
2*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x)
)/(c + d*x)] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c
 + d*x)]) + 2*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b
*c - a*d)^3*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*
x)])*Log[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 -
2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (-(b*c) + a*d)*L
og[c + d*x]) + 3*B*(b*c - a*d)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Lo
g[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + B*(b
*c - a*d)*(24*A*b*d*(b*c - a*d)^3*x + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[(e
*(a + b*x))/(c + d*x)] - 12*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a
+ b*x))/(c + d*x)]) + 8*d^3*(b*c - a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x)
)/(c + d*x)]) - 6*d^4*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 24
*B*(b*c - a*d)^4*Log[c + d*x] - 24*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(
c + d*x)])*Log[c + d*x] + 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x - d^2*(a +
 b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + B*(b*c - a*d)*(6*b*d*(b*c - a*d)^
2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^
3*Log[c + d*x]) + 12*B*(b*c - a*d)^3*(b*d*x + (-(b*c) + a*d)*Log[c + d*x])
+ 12*B*(b*c - a*d)^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*
Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))))/(60*b^3*d^3)
```

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2b^2d^2g^2i^2x^4 + A^2a^2c^2g^2i^2 + 2\left(A^2b^2cd + A^2abd^2\right)g^2i^2x^3 + \left(A^2b^2c^2 + 4\,A^2abcd + A^2a^2d^2\right)g^2i^2x^2 + 2\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="fricas")
```

```
[Out] integral(A^2*b^2*d^2*g^2*i^2*x^4 + A^2*a^2*c^2*g^2*i^2 + 2*(A^2*b^2*c*d + A
^2*a*b*d^2)*g^2*i^2*x^3 + (A^2*b^2*c^2 + 4*A^2*a*b*c*d + A^2*a^2*d^2)*g^2*i
^2*x^2 + 2*(A^2*a*b*c^2 + A^2*a^2*c*d)*g^2*i^2*x + (B^2*b^2*d^2*g^2*i^2*x^4
 + B^2*a^2*c^2*g^2*i^2 + 2*(B^2*b^2*c*d + B^2*a*b*d^2)*g^2*i^2*x^3 + (B^2*b
^2*c^2 + 4*B^2*a*b*c*d + B^2*a^2*d^2)*g^2*i^2*x^2 + 2*(B^2*a*b*c^2 + B^2*a^
2*c*d)*g^2*i^2*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^2*d^2*g^2*i^2*x
^4 + A*B*a^2*c^2*g^2*i^2 + 2*(A*B*b^2*c*d + A*B*a*b*d^2)*g^2*i^2*x^3 + (A*B
*b^2*c^2 + 4*A*B*a*b*c*d + A*B*a^2*d^2)*g^2*i^2*x^2 + 2*(A*B*a*b*c^2 + A*B*
a^2*c*d)*g^2*i^2*x)*log((b*e*x + a*e)/(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.56, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^2 (dix+ci)^2 \left(B\ln\left(\frac{(bx+a)\,e}{dx+c}\right)+A\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 2.63, size = 3656, normalized size = 4.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="maxima")
```

```
[Out] 1/5*A^2*b^2*d^2*g^2*i^2*x^5 + 1/2*A^2*b^2*c*d*g^2*i^2*x^4 + 1/2*A^2*a*b*d^2
*g^2*i^2*x^4 + 1/3*A^2*b^2*c^2*g^2*i^2*x^3 + 4/3*A^2*a*b*c*d*g^2*i^2*x^3 +
1/3*A^2*a^2*d^2*g^2*i^2*x^3 + A^2*a*b*c^2*g^2*i^2*x^2 + A^2*a^2*c*d*g^2*i^2
*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log
(d*x + c)/d)*A*B*a^2*c^2*g^2*i^2 + 2*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x +
c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*
B*a*b*c^2*g^2*i^2 + 1/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3
*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(
b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*b^2*c^2*g^2*i^2 + 2*(x^2*log(b*e*x/(d*
x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*
c - a*d)*x/(b*d))*A*B*a^2*c*d*g^2*i^2 + 4/3*(2*x^3*log(b*e*x/(d*x + c) + a*
e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d
- a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*b*c*d*g^2*i^2 +
1/6*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 +
6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^
2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*b^2*c*d*g^2*i^2 + 1/
3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*
c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/
(b^2*d^2))*A*B*a^2*d^2*g^2*i^2 + 1/6*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x
+ c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a
*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b
^3*d^3))*A*B*a*b*d^2*g^2*i^2 + 1/30*(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x
+ c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 -
 a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*
d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*A*B*b^2*d^2*g^2*i^2 + A^2*a
^2*c^2*g^2*i^2*x - 1/30*(2*b^4*c^5*g^2*i^2*log(e) + 9*a^3*b*c^2*d^3*g^2*i^2
 - 2*a^4*c*d^4*g^2*i^2 - 2*(5*g^2*i^2*log(e) - g^2*i^2)*a*b^3*c^4*d + (20*g
^2*i^2*log(e) - 9*g^2*i^2)*a^2*b^2*c^3*d^2)*B^2*log(d*x + c)/(b^2*d^3) - 1/
15*(b^5*c^5*g^2*i^2 - 5*a*b^4*c^4*d*g^2*i^2 + 10*a^2*b^3*c^3*d^2*g^2*i^2 -
10*a^3*b^2*c^2*d^3*g^2*i^2 + 5*a^4*b*c*d^4*g^2*i^2 - a^5*d^5*g^2*i^2)*(log(
b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a
*d)))*B^2/(b^3*d^3) + 1/60*(12*B^2*b^5*d^5*g^2*i^2*x^5*log(e)^2 + 6*((5*g^2
*i^2*log(e)^2 - g^2*i^2*log(e))*b^5*c*d^4 + (5*g^2*i^2*log(e)^2 + g^2*i^2*l
og(e))*a*b^4*d^5)*B^2*x^4 + 2*((10*g^2*i^2*log(e)^2 - 6*g^2*i^2*log(e) + g^
2*i^2)*b^5*c^2*d^3 + 2*(20*g^2*i^2*log(e)^2 - g^2*i^2)*a*b^4*c*d^4 + (10*g^
2*i^2*log(e)^2 + 6*g^2*i^2*log(e) + g^2*i^2)*a^2*b^3*d^5)*B^2*x^3 - ((2*g^2
*i^2*log(e) - 3*g^2*i^2)*b^5*c^3*d^2 - 3*(20*g^2*i^2*log(e)^2 - 10*g^2*i^2*
log(e) - g^2*i^2)*a*b^4*c^2*d^3 - 3*(20*g^2*i^2*log(e)^2 + 10*g^2*i^2*log(e
) - g^2*i^2)*a^2*b^3*c*d^4 - (2*g^2*i^2*log(e) + 3*g^2*i^2)*a^3*b^2*d^5)*B^
2*x^2 + 2*(2*(g^2*i^2*log(e) - g^2*i^2)*b^5*c^4*d - (10*g^2*i^2*log(e) - 11
*g^2*i^2)*a*b^4*c^3*d^2 + 6*(5*g^2*i^2*log(e)^2 - 3*g^2*i^2)*a^2*b^3*c^2*d^
3 + (10*g^2*i^2*log(e) + 11*g^2*i^2)*a^3*b^2*c*d^4 - 2*(g^2*i^2*log(e) + g^
2*i^2)*a^4*b*d^5)*B^2*x + 2*(6*B^2*b^5*d^5*g^2*i^2*x^5 + 30*B^2*a^2*b^3*c^2
*d^3*g^2*i^2*x + 15*(b^5*c*d^4*g^2*i^2 + a*b^4*d^5*g^2*i^2)*B^2*x^4 + 10*(b
^5*c^2*d^3*g^2*i^2 + 4*a*b^4*c*d^4*g^2*i^2 + a^2*b^3*d^5*g^2*i^2)*B^2*x^3 +
 30*(a*b^4*c^2*d^3*g^2*i^2 + a^2*b^3*c*d^4*g^2*i^2)*B^2*x^2 + (10*a^3*b^2*c
```

```
^2*d^3*g^2*i^2 - 5*a^4*b*c*d^4*g^2*i^2 + a^5*d^5*g^2*i^2)*B^2)*log(b*x + a)
^2 + 2*(6*B^2*b^5*d^5*g^2*i^2*x^5 + 30*B^2*a^2*b^3*c^2*d^3*g^2*i^2*x + 15*(
b^5*c*d^4*g^2*i^2 + a*b^4*d^5*g^2*i^2)*B^2*x^4 + 10*(b^5*c^2*d^3*g^2*i^2 +
4*a*b^4*c*d^4*g^2*i^2 + a^2*b^3*d^5*g^2*i^2)*B^2*x^3 + 30*(a*b^4*c^2*d^3*g^
2*i^2 + a^2*b^3*c*d^4*g^2*i^2)*B^2*x^2 + (b^5*c^5*g^2*i^2 - 5*a*b^4*c^4*d*g
^2*i^2 + 10*a^2*b^3*c^3*d^2*g^2*i^2)*B^2)*log(d*x + c)^2 + 2*(12*B^2*b^5*d^
5*g^2*i^2*x^5*log(e) + 3*((10*g^2*i^2*log(e) - g^2*i^2)*b^5*c*d^4 + (10*g^2
*i^2*log(e) + g^2*i^2)*a*b^4*d^5)*B^2*x^4 + 2*(40*a*b^4*c*d^4*g^2*i^2*log(e
) + (10*g^2*i^2*log(e) - 3*g^2*i^2)*b^5*c^2*d^3 + (10*g^2*i^2*log(e) + 3*g^
2*i^2)*a^2*b^3*d^5)*B^2*x^3 - (b^5*c^3*d^2*g^2*i^2 - a^3*b^2*d^5*g^2*i^2 -
15*(4*g^2*i^2*log(e) - g^2*i^2)*a*b^4*c^2*d^3 - 15*(4*g^2*i^2*log(e) + g^2*
i^2)*a^2*b^3*c*d^4)*B^2*x^2 + 2*(30*a^2*b^3*c^2*d^3*g^2*i^2*log(e) + b^5*c^
4*d*g^2*i^2 - 5*a*b^4*c^3*d^2*g^2*i^2 + 5*a^3*b^2*c*d^4*g^2*i^2 - a^4*b*d^5
*g^2*i^2)*B^2*x + (2*a^5*d^5*g^2*i^2*log(e) + 2*a*b^4*c^4*d*g^2*i^2 - 9*a^2
*b^3*c^3*d^2*g^2*i^2 + (20*g^2*i^2*log(e) + 9*g^2*i^2)*a^3*b^2*c^2*d^3 - 2*
(5*g^2*i^2*log(e) + g^2*i^2)*a^4*b*c*d^4)*B^2)*log(b*x + a) - 2*(12*B^2*b^5
*d^5*g^2*i^2*x^5*log(e) + 3*((10*g^2*i^2*log(e) - g^2*i^2)*b^5*c*d^4 + (10*
g^2*i^2*log(e) + g^2*i^2)*a*b^4*d^5)*B^2*x^4 + 2*(40*a*b^4*c*d^4*g^2*i^2*lo
g(e) + (10*g^2*i^2*log(e) - 3*g^2*i^2)*b^5*c^2*d^3 + (10*g^2*i^2*log(e) + 3
*g^2*i^2)*a^2*b^3*d^5)*B^2*x^3 - (b^5*c^3*d^2*g^2*i^2 - a^3*b^2*d^5*g^2*i^2
 - 15*(4*g^2*i^2*log(e) - g^2*i^2)*a*b^4*c^2*d^3 - 15*(4*g^2*i^2*log(e) + g
^2*i^2)*a^2*b^3*c*d^4)*B^2*x^2 + 2*(30*a^2*b^3*c^2*d^3*g^2*i^2*log(e) + b^5
*c^4*d*g^2*i^2 - 5*a*b^4*c^3*d^2*g^2*i^2 + 5*a^3*b^2*c*d^4*g^2*i^2 - a^4*b*
d^5*g^2*i^2)*B^2*x + 2*(6*B^2*b^5*d^5*g^2*i^2*x^5 + 30*B^2*a^2*b^3*c^2*d^3*
g^2*i^2*x + 15*(b^5*c*d^4*g^2*i^2 + a*b^4*d^5*g^2*i^2)*B^2*x^4 + 10*(b^5*c^
2*d^3*g^2*i^2 + 4*a*b^4*c*d^4*g^2*i^2 + a^2*b^3*d^5*g^2*i^2)*B^2*x^3 + 30*(
a*b^4*c^2*d^3*g^2*i^2 + a^2*b^3*c*d^4*g^2*i^2)*B^2*x^2 + (10*a^3*b^2*c^2*d^
3*g^2*i^2 - 5*a^4*b*c*d^4*g^2*i^2 + a^5*d^5*g^2*i^2)*B^2)*log(b*x + a))*log
(d*x + c))/(b^3*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a g + b g x\right)^2 (c i + d i x)^2 \left(A + B \ln\left(\frac{e\ (a + b x)}{c + d x}\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
x)
```

```
[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

3.66 $\int (ag+bgx)(ci+dix)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx$

Optimal. Leaf size=589

$$-\frac{Bgi^2(bc-ad)^4\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A+B\right)}{6b^3d^2}-\frac{Bgi^2(a+bx)(bc-ad)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{6b^3d}+\frac{gi^2(a+$$

```
[Out] 1/12*B^2*(-a*d+b*c)^3*g*i^2*x/b^2/d+1/12*B^2*(-a*d+b*c)^2*g*i^2*(d*x+c)^2/b
/d^2-1/12*B^2*(-a*d+b*c)^4*g*i^2*ln((b*x+a)/(d*x+c))/b^3/d^2-1/6*B*(-a*d+b*
c)^3*g*i^2*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^3/d-1/6*B*(-a*d+b*c)^2*g*i
^2*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^3+1/4*B*(-a*d+b*c)^2*g*i^2*(d*x+
c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/b/d^2-1/6*B*(-a*d+b*c)*g*i^2*(d*x+c)^3*(A+
B*ln(e*(b*x+a)/(d*x+c)))/d^2+1/12*(-a*d+b*c)^2*g*i^2*(b*x+a)^2*(A+B*ln(e*(b
*x+a)/(d*x+c)))^2/b^3+1/6*(-a*d+b*c)*g*i^2*(b*x+a)^2*(d*x+c)*(A+B*ln(e*(b*x
+a)/(d*x+c)))^2/b^2+1/4*g*i^2*(b*x+a)^2*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)
))^2/b-1/6*B*(-a*d+b*c)^4*g*i^2*ln((-a*d+b*c)/b/(d*x+c))*(A+B+B*ln(e*(b*x+a
)/(d*x+c)))/b^3/d^2-1/4*B^2*(-a*d+b*c)^4*g*i^2*ln(d*x+c)/b^3/d^2-1/6*B^2*(-
a*d+b*c)^4*g*i^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^3/d^2
```

Rubi [A] time = 1.59, antiderivative size = 570, normalized size of antiderivative = 0.97, number of steps used = 46, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2gi^2(bc-ad)^4\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{6b^3d^2}+\frac{Bgi^2(bc-ad)^4\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{6b^3d^2}+\frac{ABgi^2x(bc-ad)^3}{6b^2d}+$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] (A*B*(b*c - a*d)^3*g*i^2*x)/(6*b^2*d) + (B^2*(b*c - a*d)^3*g*i^2*x)/(12*b^2
*d) + (B^2*(b*c - a*d)^2*g*i^2*(c + d*x)^2)/(12*b*d^2) + (B^2*(b*c - a*d)^4
*g*i^2*Log[a + b*x])/(12*b^3*d^2) - (B^2*(b*c - a*d)^4*g*i^2*Log[a + b*x]^2
)/(12*b^3*d^2) + (B^2*(b*c - a*d)^3*g*i^2*(a + b*x)*Log[(e*(a + b*x))/(c +
d*x)])/(6*b^3*d) + (B*(b*c - a*d)^2*g*i^2*(c + d*x)^2*(A + B*Log[(e*(a + b*
x))/(c + d*x)]))/(12*b*d^2) - (B*(b*c - a*d)*g*i^2*(c + d*x)^3*(A + B*Log[(
e*(a + b*x))/(c + d*x)]))/(6*d^2) + (B*(b*c - a*d)^4*g*i^2*Log[a + b*x]*(A
+ B*Log[(e*(a + b*x))/(c + d*x)]))/(6*b^3*d^2) - ((b*c - a*d)*g*i^2*(c + d*
x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(3*d^2) + (b*g*i^2*(c + d*x)^4
*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(4*d^2) - (B^2*(b*c - a*d)^4*g*i^2
*Log[c + d*x])/(6*b^3*d^2) + (B^2*(b*c - a*d)^4*g*i^2*Log[a + b*x]*Log[(b*(
c + d*x))/(b*c - a*d)])/(6*b^3*d^2) + (B^2*(b*c - a*d)^4*g*i^2*PolyLog[2, -
((d*(a + b*x))/(b*c - a*d))])/(6*b^3*d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (66c+66dx)^2(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx = \int\left(\frac{(-bc+ad)g(66c+66dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d}\right.$$

$$= \frac{(bg)\int(66c+66dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx}{66d} + \frac{((-b}{}$$

$$= -\frac{1452(bc-ad)g(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d^2} + \frac{10}{}$$

$$= -\frac{1452(bc-ad)g(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d^2} + \frac{10}{}$$

$$= -\frac{1452(bc-ad)g(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d^2} + \frac{10}{}$$

$$= -\frac{1452(bc-ad)g(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d^2} + \frac{10}{}$$

$$= \frac{726AB(bc-ad)^3gx}{b^2d} + \frac{363B(bc-ad)^2g(c+dx)^2\left(A+\right.}{bd^2}$$

$$= \frac{726AB(bc-ad)^3gx}{b^2d} + \frac{726B^2(bc-ad)^3g(a+bx)\log\left(\right.}{b^3d}$$

$$= \frac{726AB(bc-ad)^3gx}{b^2d} + \frac{726B^2(bc-ad)^3g(a+bx)\log\left(\right.}{b^3d}$$

$$= \frac{726AB(bc-ad)^3gx}{b^2d} + \frac{363B^2(bc-ad)^3gx}{b^2d} + \frac{363B^2(bc}{}$$

$$= \frac{726AB(bc-ad)^3gx}{b^2d} + \frac{363B^2(bc-ad)^3gx}{b^2d} + \frac{363B^2(bc}{}$$

$$= \frac{726AB(bc-ad)^3gx}{b^2d} + \frac{363B^2(bc-ad)^3gx}{b^2d} + \frac{363B^2(bc}{}$$

$$= \frac{726AB(bc-ad)^3gx}{b^2d} + \frac{363B^2(bc-ad)^3gx}{b^2d} + \frac{363B^2(bc}{}$$

Mathematica [A] time = 0.59, size = 677, normalized size = 1.15

$$gi^2\left(\frac{4B(bc-ad)^2\left(b^2(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2(bc-ad)^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2Abdx(bc-ad)+2Bd(a+bx)(bc-ad)\log\left(\frac{e(a+bx)}{c+dx}\right)-B(bc-ad)^2}{b^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]
)^2,x]
```

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

```
2*(2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*(b*d*x + (b*c - a*d)*Log[a + b*x])
 + 2*B*d*(b*c - a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + b^2*(c + d*x)
^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*(b*c - a*d)^2*Log[a + b*x]*(A +
 B*Log[(e*(a + b*x))/(c + d*x)]) - 2*B*(b*c - a*d)^2*Log[c + d*x] - B*(b*c
- a*d)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) -
2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^3 - (B*(b*c - a*d)*(6*A*b*d
*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*(b*d*x + (b*c - a*d)*Log[a + b*x]) - B
*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a
 + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 3*b
^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*b^3*(c
+ d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*(b*c - a*d)^3*Log[a + b*x
]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*c - a*d)^3*Log[c + d*x] - 3
*B*(b*c - a*d)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a
*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^3))/(12*d^2)
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral}\Big(A^2bd^2gi^2x^3 + A^2ac^2gi^2 + \left(2\,A^2bcd + A^2ad^2\right)gi^2x^2 + \left(A^2bc^2 + 2\,A^2acd\right)gi^2x + \left(B^2bd^2gi^2x^3 + B^2ac^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="fricas")
```

```
[Out] integral(A^2*b*d^2*g*i^2*x^3 + A^2*a*c^2*g*i^2 + (2*A^2*b*c*d + A^2*a*d^2)*
g*i^2*x^2 + (A^2*b*c^2 + 2*A^2*a*c*d)*g*i^2*x + (B^2*b*d^2*g*i^2*x^3 + B^2*
a*c^2*g*i^2 + (2*B^2*b*c*d + B^2*a*d^2)*g*i^2*x^2 + (B^2*b*c^2 + 2*B^2*a*c*
d)*g*i^2*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b*d^2*g*i^2*x^3 + A*B*a
*c^2*g*i^2 + (2*A*B*b*c*d + A*B*a*d^2)*g*i^2*x^2 + (A*B*b*c^2 + 2*A*B*a*c*d
)*g*i^2*x)*log((b*e*x + a*e)/(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.18, size = 0, normalized size = 0.00

$$\int \left(bgx + ag\right)\left(dix + ci\right)^2 \left(B\ln\left(\frac{(bx+a)\,e}{dx+c}\right) + A\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 2.34, size = 2259, normalized size = 3.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="maxima")
```

```
[Out] 1/4*A^2*b*d^2*g*i^2*x^4 + 2/3*A^2*b*c*d*g*i^2*x^3 + 1/3*A^2*a*d^2*g*i^2*x^3
 + 1/2*A^2*b*c^2*g*i^2*x^2 + A^2*a*c*d*g*i^2*x^2 + 2*(x*log(b*e*x/(d*x + c)
 + a*e/(d*x + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*A*B*a*c^2*g*i^2 +
(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(
d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*b*c^2*g*i^2 + 2*(x^2*log(b*e*x/(d*x
 + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c
 - a*d)*x/(b*d))*A*B*a*c*d*g*i^2 + 2/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(d*
x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b
*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*b*c*d*g*i^2 + 1/3*(2*x^
3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log
(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^
2))*A*B*a*d^2*g*i^2 + 1/12*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*
a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*
x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A
*B*b*d^2*g*i^2 + A^2*a*c^2*g*i^2*x - 1/12*(7*a^2*b*c^2*d^2*g*i^2 - 2*a^3*c*
d^3*g*i^2 - (2*g*i^2*log(e) - g*i^2)*b^3*c^4 + 2*(4*g*i^2*log(e) - 3*g*i^2)
*a*b^2*c^3*d)*B^2*log(d*x + c)/(b^2*d^2) + 1/6*(b^4*c^4*g*i^2 - 4*a*b^3*c^3
*d*g*i^2 + 6*a^2*b^2*c^2*d^2*g*i^2 - 4*a^3*b*c*d^3*g*i^2 + a^4*d^4*g*i^2)*(
log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c
 - a*d)))*B^2/(b^3*d^2) + 1/12*(3*B^2*b^4*d^4*g*i^2*x^4*log(e)^2 + 2*((4*g*
i^2*log(e)^2 - g*i^2*log(e))*b^4*c*d^3 + (2*g*i^2*log(e)^2 + g*i^2*log(e))*
a*b^3*d^4)*B^2*x^3 + ((6*g*i^2*log(e)^2 - 5*g*i^2*log(e) + g*i^2)*b^4*c^2*d
^2 + 2*(6*g*i^2*log(e)^2 + 2*g*i^2*log(e) - g*i^2)*a*b^3*c*d^3 + (g*i^2*log
(e) + g*i^2)*a^2*b^2*d^4)*B^2*x^2 - ((2*g*i^2*log(e) - 3*g*i^2)*b^4*c^3*d -
 (12*g*i^2*log(e)^2 - 4*g*i^2*log(e) - 7*g*i^2)*a*b^3*c^2*d^2 - (8*g*i^2*lo
g(e) + 5*g*i^2)*a^2*b^2*c*d^3 + (2*g*i^2*log(e) + g*i^2)*a^3*b*d^4)*B^2*x +
 (3*B^2*b^4*d^4*g*i^2*x^4 + 12*B^2*a*b^3*c^2*d^2*g*i^2*x + 4*(2*b^4*c*d^3*g
*i^2 + a*b^3*d^4*g*i^2)*B^2*x^3 + 6*(b^4*c^2*d^2*g*i^2 + 2*a*b^3*c*d^3*g*i^
2)*B^2*x^2 + (6*a^2*b^2*c^2*d^2*g*i^2 - 4*a^3*b*c*d^3*g*i^2 + a^4*d^4*g*i^2
)*B^2)*log(b*x + a)^2 + (3*B^2*b^4*d^4*g*i^2*x^4 + 12*B^2*a*b^3*c^2*d^2*g*i
^2*x + 4*(2*b^4*c*d^3*g*i^2 + a*b^3*d^4*g*i^2)*B^2*x^3 + 6*(b^4*c^2*d^2*g*i
^2 + 2*a*b^3*c*d^3*g*i^2)*B^2*x^2 - (b^4*c^4*g*i^2 - 4*a*b^3*c^3*d*g*i^2)*B
^2)*log(d*x + c)^2 + (6*B^2*b^4*d^4*g*i^2*x^4*log(e) + 2*((8*g*i^2*log(e) -
 g*i^2)*b^4*c*d^3 + (4*g*i^2*log(e) + g*i^2)*a*b^3*d^4)*B^2*x^3 + (a^2*b^2*
d^4*g*i^2 + (12*g*i^2*log(e) - 5*g*i^2)*b^4*c^2*d^2 + 4*(6*g*i^2*log(e) + g
*i^2)*a*b^3*c*d^3)*B^2*x^2 - 2*(b^4*c^3*d*g*i^2 - 4*a^2*b^2*c*d^3*g*i^2 + a
^3*b*d^4*g*i^2 - 2*(6*g*i^2*log(e) - g*i^2)*a*b^3*c^2*d^2)*B^2*x - (2*a*b^3
*c^3*d*g*i^2 - (12*g*i^2*log(e) + g*i^2)*a^2*b^2*c^2*d^2 + 2*(4*g*i^2*log(e
) - g*i^2)*a^3*b*c*d^3 - (2*g*i^2*log(e) - g*i^2)*a^4*d^4)*B^2)*log(b*x + a
) - (6*B^2*b^4*d^4*g*i^2*x^4*log(e) + 2*((8*g*i^2*log(e) - g*i^2)*b^4*c*d^3
 + (4*g*i^2*log(e) + g*i^2)*a*b^3*d^4)*B^2*x^3 + (a^2*b^2*d^4*g*i^2 + (12*g
*i^2*log(e) - 5*g*i^2)*b^4*c^2*d^2 + 4*(6*g*i^2*log(e) + g*i^2)*a*b^3*c*d^3
)*B^2*x^2 - 2*(b^4*c^3*d*g*i^2 - 4*a^2*b^2*c*d^3*g*i^2 + a^3*b*d^4*g*i^2 -
2*(6*g*i^2*log(e) - g*i^2)*a*b^3*c^2*d^2)*B^2*x + 2*(3*B^2*b^4*d^4*g*i^2*x^
4 + 12*B^2*a*b^3*c^2*d^2*g*i^2*x + 4*(2*b^4*c*d^3*g*i^2 + a*b^3*d^4*g*i^2)*
B^2*x^3 + 6*(b^4*c^2*d^2*g*i^2 + 2*a*b^3*c*d^3*g*i^2)*B^2*x^2 + (6*a^2*b^2*
c^2*d^2*g*i^2 - 4*a^3*b*c*d^3*g*i^2 + a^4*d^4*g*i^2)*B^2)*log(b*x + a))*log
(d*x + c))/(b^3*d^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a g + b g x\right) \left(c i + d i x\right)^2 \left(A + B \ln\left(\frac{e\,\left(a + b x\right)}{c + d x}\right)\right)^2 \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)
```

```
[Out] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x
)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
[Out] Timed out
```

3.67 $\int (ci+dix)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx$

Optimal. Leaf size=334

$$\frac{2Bi^2(bc-ad)^3\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^3d}-\frac{2Bi^2(a+bx)(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^3}-\frac{Bi^2(c+dx)^2}{}$$

```
[Out] 1/3*B^2*(-a*d+b*c)^2*i^2*x/b^2+1/3*B^2*(-a*d+b*c)^3*i^2*ln((b*x+a)/(d*x+c))
/b^3/d-2/3*B*(-a*d+b*c)^2*i^2*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^3-1/3*B
*(-a*d+b*c)*i^2*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/b/d+1/3*i^2*(d*x+c)^3
*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d+B^2*(-a*d+b*c)^3*i^2*ln(d*x+c)/b^3/d+2/3*B
*(-a*d+b*c)^3*i^2*(A+B*ln(e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^3
/d-2/3*B^2*(-a*d+b*c)^3*i^2*polylog(2,b*(d*x+c)/d/(b*x+a))/b^3/d
```

Rubi [A] time = 0.53, antiderivative size = 420, normalized size of antiderivative = 1.26, number of steps used = 20, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$-\frac{2B^2i^2(bc-ad)^3\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{3b^3d}-\frac{2Bi^2(bc-ad)^3\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{3b^3d}-\frac{2ABi^2x(bc-ad)^2}{3b^2}-\frac{Bi^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] (-2*A*B*(b*c - a*d)^2*i^2*x)/(3*b^2) + (B^2*(b*c - a*d)^2*i^2*x)/(3*b^2) +
(B^2*(b*c - a*d)^3*i^2*Log[a + b*x])/(3*b^3*d) + (B^2*(b*c - a*d)^3*i^2*Log
[a + b*x]^2)/(3*b^3*d) - (2*B^2*(b*c - a*d)^2*i^2*(a + b*x)*Log[(e*(a + b*x
))/(c + d*x)])/(3*b^3) - (B*(b*c - a*d)*i^2*(c + d*x)^2*(A + B*Log[(e*(a +
b*x))/(c + d*x)]))/(3*b*d) - (2*B*(b*c - a*d)^3*i^2*Log[a + b*x]*(A + B*Log
[(e*(a + b*x))/(c + d*x)]))/(3*b^3*d) + (i^2*(c + d*x)^3*(A + B*Log[(e*(a +
 b*x))/(c + d*x)])^2)/(3*d) + (2*B^2*(b*c - a*d)^3*i^2*Log[c + d*x])/(3*b^3
*d) - (2*B^2*(b*c - a*d)^3*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])
/(3*b^3*d) - (2*B^2*(b*c - a*d)^3*i^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d
))])/(3*b^3*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (67c+67dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx=\frac{4489(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3d}-\frac{(2B)\int\frac{300763(bc-ad)(c+dx)^2(}{a+b}}{201d}$$

$$=\frac{4489(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3d}-\frac{(8978B(bc-ad))\int\frac{(c+dx)}{}}{3d}$$

$$=\frac{4489(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3d}-\frac{(8978B(bc-ad))\int\left(\frac{d(bc-}{}\right.}{}$$

$$=\frac{4489(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3d}-\frac{(8978B(bc-ad))\int(c+}{}$$

$$=-\frac{8978AB(bc-ad)^2x}{3b^2}-\frac{4489B(bc-ad)(c+dx)^2\left(A+B\log\left(\frac{e(a}{c}\right.\right.}{3bd}$$

$$=-\frac{8978AB(bc-ad)^2x}{3b^2}-\frac{8978B^2(bc-ad)^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{3b^3}-$$

$$=-\frac{8978AB(bc-ad)^2x}{3b^2}-\frac{8978B^2(bc-ad)^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{3b^3}-$$

$$=-\frac{8978AB(bc-ad)^2x}{3b^2}+\frac{4489B^2(bc-ad)^2x}{3b^2}+\frac{4489B^2(bc-ad)^3}{3b^3d}$$

$$=-\frac{8978AB(bc-ad)^2x}{3b^2}+\frac{4489B^2(bc-ad)^2x}{3b^2}+\frac{4489B^2(bc-ad)^3}{3b^3d}$$

$$=-\frac{8978AB(bc-ad)^2x}{3b^2}+\frac{4489B^2(bc-ad)^2x}{3b^2}+\frac{4489B^2(bc-ad)^3}{3b^3d}$$

$$=-\frac{8978AB(bc-ad)^2x}{3b^2}+\frac{4489B^2(bc-ad)^2x}{3b^2}+\frac{4489B^2(bc-ad)^3}{3b^3d}$$

Mathematica [A] time = 0.22, size = 287, normalized size = 0.86

$$i^2\left((c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2-\frac{B(bc-ad)\left(b^2(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2(bc-ad)^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2Abdx(bc-ad)+2\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] (i^2*((c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (B*(b*c - a*d)*(
2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*(b*d*x + (b*c - a*d)*Log[a + b*x]) +
```

```
2*B*d*(b*c - a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + b^2*(c + d*x)^2*
(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*(b*c - a*d)^2*Log[a + b*x]*(A + B*
Log[(e*(a + b*x))/(c + d*x)]) - 2*B*(b*c - a*d)^2*Log[c + d*x] - B*(b*c - a
*d)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*P
olyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^3))/(3*d)
```

fricas [F] time = 1.09, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2d^2i^2x^2 + 2\,A^2cdi^2x + A^2c^2i^2 + \left(B^2d^2i^2x^2 + 2\,B^2cdi^2x + B^2c^2i^2\right)\log\left(\frac{bex + ae}{dx + c}\right)^2 + 2\left(ABd^2i^2x^2 + \right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas
")
```

```
[Out] integral(A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^2
 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d
^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)), x
)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.83, size = 0, normalized size = 0.00

$$\int (dix + ci)^2 \left(B\ln\left(\frac{(bx + a)\,e}{dx + c}\right) + A\right)^2 \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 2.03, size = 1202, normalized size = 3.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima
")
```

```
[Out] 1/3*A^2*d^2*i^2*x^3 + A^2*c*d*i^2*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x
 + c)) + a*log(b*x + a)/b - c*log(d*x + c)/d)*A*B*c^2*i^2 + 2*(x^2*log(b*e*
x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2
- (b*c - a*d)*x/(b*d))*A*B*c*d*i^2 + 1/3*(2*x^3*log(b*e*x/(d*x + c) + a*e/(
d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a
*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*d^2*i^2 + A^2*c^2*i^2
*x - 1/3*(5*a*b*c^2*d*i^2 - 2*a^2*c*d^2*i^2 + (2*i^2*log(e) - 3*i^2)*b^2*c^
3)*B^2*log(d*x + c)/(b^2*d) - 2/3*(b^3*c^3*i^2 - 3*a*b^2*c^2*d*i^2 + 3*a^2*
b*c*d^2*i^2 - a^3*d^3*i^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1)
 + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^3*d) + 1/3*(B^2*b^3*d^3*i^2*x^
3*log(e)^2 + (a*b^2*d^3*i^2*log(e) + (3*i^2*log(e)^2 - i^2*log(e))*b^3*c*d^
```

```
2)*B^2*x^2 + ((3*i^2*log(e)^2 - 4*i^2*log(e) + i^2)*b^3*c^2*d + 2*(3*i^2*lo
g(e) - i^2)*a*b^2*c*d^2 - (2*i^2*log(e) - i^2)*a^2*b*d^3)*B^2*x + (B^2*b^3*
d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + (3*a*b^2*c^
2*d*i^2 - 3*a^2*b*c*d^2*i^2 + a^3*d^3*i^2)*B^2)*log(b*x + a)^2 + (B^2*b^3*d
^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*
i^2)*log(d*x + c)^2 + (2*B^2*b^3*d^3*i^2*x^3*log(e) + (a*b^2*d^3*i^2 + (6*i
^2*log(e) - i^2)*b^3*c*d^2)*B^2*x^2 + 2*(3*a*b^2*c*d^2*i^2 - a^2*b*d^3*i^2
+ (3*i^2*log(e) - 2*i^2)*b^3*c^2*d)*B^2*x + (2*(3*i^2*log(e) - 2*i^2)*a*b^2
*c^2*d - (6*i^2*log(e) - 7*i^2)*a^2*b*c*d^2 + (2*i^2*log(e) - 3*i^2)*a^3*d^
3)*B^2)*log(b*x + a) - (2*B^2*b^3*d^3*i^2*x^3*log(e) + (a*b^2*d^3*i^2 + (6*
i^2*log(e) - i^2)*b^3*c*d^2)*B^2*x^2 + 2*(3*a*b^2*c*d^2*i^2 - a^2*b*d^3*i^2
 + (3*i^2*log(e) - 2*i^2)*b^3*c^2*d)*B^2*x + 2*(B^2*b^3*d^3*i^2*x^3 + 3*B^2
*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + (3*a*b^2*c^2*d*i^2 - 3*a^2*b*c
*d^2*i^2 + a^3*d^3*i^2)*B^2)*log(b*x + a))*log(d*x + c))/(b^3*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,i+d\,i\,x)^2\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)
[Out] int((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
[Out] Timed out
```

3.68 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ag+bgx}\,dx$

Optimal. Leaf size=535

$$\frac{2Bi^2(bc-ad)^2\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g}+\frac{di^2(a+bx)(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{b^3g}-\frac{Bdi^2(a+bx)(bc}{}$$

```
[Out] -B*d*(-a*d+b*c)*i^2*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^3/g+2*B*(-a*d+b*c
)^2*i^2*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^3/g+d*(-a*d+
b*c)*i^2*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^3/g+1/2*i^2*(d*x+c)^2*(A+B
*ln(e*(b*x+a)/(d*x+c)))^2/b/g+B^2*(-a*d+b*c)^2*i^2*ln(d*x+c)/b^3/g+B*(-a*d+
b*c)^2*i^2*(A+B*ln(e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g-(-a*
d+b*c)^2*i^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g+
2*B^2*(-a*d+b*c)^2*i^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^3/g-B^2*(-a*d+b*c)^
2*i^2*polylog(2,b*(d*x+c)/d/(b*x+a))/b^3/g+2*B*(-a*d+b*c)^2*i^2*(A+B*ln(e*(
b*x+a)/(d*x+c)))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^3/g+2*B^2*(-a*d+b*c)^2*i^
2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^3/g
```

Rubi [B] time = 5.12, antiderivative size = 1676, normalized size of antiderivative = 3.13, number of steps used = 86, number of rules used = 27, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2440, 2434, 2433, 2375, 2317, 2374, 6589, 2499, 2302, 30, 2396, 2525, 2486, 31}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x),
x]
```

```
[Out] -((A*B*d*(b*c - a*d)*i^2*x)/(b^2*g)) - (a*B^2*d*(b*c - a*d)*i^2*Log[a + b*x
]^2)/(b^3*g) + (B^2*(b*c - a*d)^2*i^2*Log[a + b*x]^2)/(2*b^3*g) - (A*B*(b*c
 - a*d)^2*i^2*Log[g*(a + b*x)]^2)/(b^3*g) + (B^2*(b*c - a*d)^2*i^2*Log[g*(a
 + b*x)]^3)/(3*b^3*g) - (B^2*(b*c - a*d)^2*i^2*Log[a + b*x]^2*Log[-c - d*x]
)/(b^3*g) + (2*B^2*(b*c - a*d)^2*i^2*Log[a + b*x]*Log[g*(a + b*x)]*Log[-c -
 d*x])/(b^3*g) - (B^2*(b*c - a*d)^2*i^2*Log[g*(a + b*x)]^2*Log[-c - d*x])/(
b^3*g) + (B^2*(b*c - a*d)^2*i^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c +
d*x)^(-1)]^2)/(b^3*g) - (B^2*(b*c - a*d)^2*i^2*Log[g*(a + b*x)]*Log[(c + d*
x)^(-1)]^2)/(b^3*g) - (B^2*d*(b*c - a*d)*i^2*(a + b*x)*Log[(e*(a + b*x))/(c
 + d*x)])/(b^3*g) + (2*a*B*d*(b*c - a*d)*i^2*Log[a + b*x]*(A + B*Log[(e*(a
+ b*x))/(c + d*x)]))/(b^3*g) - (B*(b*c - a*d)^2*i^2*Log[a + b*x]*(A + B*Log
[(e*(a + b*x))/(c + d*x)]))/(b^3*g) + (d*(b*c - a*d)*i^2*x*(A + B*Log[(e*(a
 + b*x))/(c + d*x)])^2)/(b^2*g) + (i^2*(c + d*x)^2*(A + B*Log[(e*(a + b*x))
/(c + d*x)])^2)/(2*b*g) + (B^2*(b*c - a*d)^2*i^2*Log[c + d*x])/(b^3*g) + (2
*B^2*c*(b*c - a*d)*i^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^2
*g) - (2*B*c*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d
*x])/(b^2*g) - (B^2*c*(b*c - a*d)*i^2*Log[c + d*x]^2)/(b^2*g) + (2*a*B^2*d*
(b*c - a*d)*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g) - (B^2
*(b*c - a*d)^2*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g) + (
B^2*(b*c - a*d)^2*i^2*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g
) + (B^2*(b*c - a*d)^2*i^2*Log[g*(a + b*x)]^2*Log[(b*(c + d*x))/(b*c - a*d)
])/(b^3*g) + ((b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[
a*g + b*g*x])/(b^3*g) + (2*A*B*(b*c - a*d)^2*i^2*Log[(b*(c + d*x))/(b*c - a
*d)]*Log[a*g + b*g*x])/(b^3*g) - (2*B^2*(b*c - a*d)^2*i^2*(Log[a + b*x] + L
og[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[(b*(c + d*x))/(b*c -
 a*d)]*Log[a*g + b*g*x])/(b^3*g) - (B^2*(b*c - a*d)^2*i^2*Log[(e*(a + b*x))
/(c + d*x)]*Log[a*g + b*g*x]^2)/(b^3*g) - (B^2*(b*c - a*d)^2*i^2*Log[(b*(c
```

```
+ d*x))/(b*c - a*d)]*Log[a*g + b*g*x]^2)/(b^3*g) + (2*a*B^2*d*(b*c - a*d)*i
^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g) + (2*A*B*(b*c - a*d)^2
*i^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g) - (B^2*(b*c - a*d)^2
*i^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g) + (2*B^2*(b*c - a*d)
^2*i^2*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g) - (2*
B^2*(b*c - a*d)^2*i^2*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x
))/(c + d*x)])*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g) + (2*B^2*c
*(b*c - a*d)*i^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^2*g) - (2*B^2*(b
*c - a*d)^2*i^2*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/
(b^3*g) - (2*B^2*(b*c - a*d)^2*i^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))]
)/(b^3*g) - (2*B^2*(b*c - a*d)^2*i^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])
/(b^3*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
```

```
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
```

```
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
```

```
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(68c+68dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ag+bgx}\,dx = \int\left(\frac{4624d(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g} + \frac{68d(68c+68dx)\left(A+\right.}{bg}\right.$$

$$= \frac{\left(4624(bc-ad)^2\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ag+bgx}\,dx}{b^2} + \frac{(68d)\int(68c+68dx)\left(A\right.}{bg}$$

$$= \frac{4624d(bc-ad)x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g} + \frac{2312(c+dx)^2\left(A+B\log\right.}{bg}$$

$$= \frac{4624d(bc-ad)x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g} + \frac{2312(c+dx)^2\left(A+B\log\right.}{bg}$$

$$= \frac{4624d(bc-ad)x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g} + \frac{2312(c+dx)^2\left(A+B\log\right.}{bg}$$

$$= \frac{4624d(bc-ad)x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g} + \frac{2312(c+dx)^2\left(A+B\log\right.}{bg}$$

$$= -\frac{4624ABd(bc-ad)x}{b^2g} + \frac{9248aBd(bc-ad)\log(a+bx)\left(A+B\log\right.}{b^3g}$$

$$= -\frac{4624ABd(bc-ad)x}{b^2g} - \frac{4624B^2d(bc-ad)(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g} + $$

$$= -\frac{4624ABd(bc-ad)x}{b^2g} - \frac{4624B^2d(bc-ad)(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g} + $$

$$= -\frac{4624ABd(bc-ad)x}{b^2g} - \frac{4624B^2d(bc-ad)(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g} + $$

$$= -\frac{4624ABd(bc-ad)x}{b^2g} - \frac{4624B^2d(bc-ad)(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g} + $$

$$= -\frac{4624ABd(bc-ad)x}{b^2g} - \frac{4624aB^2d(bc-ad)\log^2(a+bx)}{b^3g} + \frac{2312B^2}{}$$

$$= -\frac{4624ABd(bc-ad)x}{b^2g} - \frac{4624aB^2d(bc-ad)\log^2(a+bx)}{b^3g} + \frac{2312B^2}{}$$

$$= -\frac{4624ABd(bc-ad)x}{b^2g} - \frac{4624aB^2d(bc-ad)\log^2(a+bx)}{b^3g} + \frac{2312B^2}{}$$

$$= -\frac{4624ABd(bc-ad)x}{b^2g} - \frac{4624aB^2d(bc-ad)\log^2(a+bx)}{b^3g} + \frac{2312B^2}{}$$

$$= -\frac{4624ABd(bc-ad)x}{b^2g} - \frac{4624aB^2d(bc-ad)\log^2(a+bx)}{b^3g} + \frac{2312B^2}{}$$

Mathematica [B] time = 3.67, size = 1987, normalized size = 3.71

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x),x]
```

```
[Out] (i^2*(12*A^2*b*d*(2*b*c - a*d)*x + 6*A^2*b^2*d^2*x^2 + 12*A^2*(b*c - a*d)^2
*Log[a + b*x] - 24*A*b*B*c*(a*d*Log[a/b + x]^2 - 2*a*d*Log[a/b + x]*(1 + Lo
g[a + b*x]) + 2*(-(b*c) + a*d + Log[c/d + x]*(b*c + a*d*Log[a + b*x] - a*d*
Log[(d*(a + b*x))/(-(b*c) + a*d)]) + (-(b*d*x) + a*d*Log[a + b*x])*Log[(e*(
a + b*x))/(c + d*x)]) - 2*a*d*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 12*A
*b^2*B*c^2*(Log[a/b + x]^2 - 2*Log[a + b*x]*(Log[a/b + x] - Log[c/d + x] -
Log[(e*(a + b*x))/(c + d*x)]) - 2*(Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) +
 a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 6*A*B*(-4*a*d^2*(a + b*x
)*(-1 + Log[a/b + x]) + 2*a^2*d^2*Log[a/b + x]^2 + 4*a*b*d*(c + d*x)*(-1 +
Log[c/d + x]) + d^2*(b*x*(2*a - b*x) + 2*b^2*x^2*Log[a/b + x] - 2*a^2*Log[a
 + b*x]) - 2*d^2*(b*x*(-2*a + b*x) + 2*a^2*Log[a + b*x])*(Log[a/b + x] - Lo
g[c/d + x] - Log[(e*(a + b*x))/(c + d*x)]) + b^2*(d*x*(-2*c + d*x) - 2*d^2*
x^2*Log[c/d + x] + 2*c^2*Log[c + d*x]) - 4*a^2*d^2*(Log[c/d + x]*Log[(d*(a
+ b*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 8*b*B^2
*c*(Log[(e*(a + b*x))/(c + d*x)]*(-(a*d*Log[(e*(a + b*x))/(c + d*x)]^2) + 6
*(b*c - a*d)*Log[(b*c - a*d)/(b*c + b*d*x)] + 3*d*Log[(e*(a + b*x))/(c + d*
x)]*(a + b*x + a*Log[(b*c - a*d)/(b*c + b*d*x)])) + 6*(b*c - a*d + a*d*Log[
(e*(a + b*x))/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 6*a*d*P
olyLog[3, (d*(a + b*x))/(b*(c + d*x))]) + B^2*(4*a^2*d^2*Log[a/b + x]^3 - 1
2*a*d^2*(2*b*x - 2*(a + b*x)*Log[a/b + x] + (a + b*x)*Log[a/b + x]^2) - 3*d
^2*(b*x*(6*a - b*x) + (-6*a^2 - 4*a*b*x + 2*b^2*x^2)*Log[a/b + x] + 2*(a^2
- b^2*x^2)*Log[a/b + x]^2) - 12*a*b*d*(2*d*x - 2*(c + d*x)*Log[c/d + x] + (
c + d*x)*Log[c/d + x]^2) - 3*b^2*(d*x*(6*c - d*x) + (-6*c^2 - 4*c*d*x + 2*d
^2*x^2)*Log[c/d + x] + 2*(c^2 - d^2*x^2)*Log[c/d + x]^2) + 6*d^2*(b*x*(-2*a
 + b*x) + 2*a^2*Log[a + b*x])*(-Log[a/b + x] + Log[c/d + x] + Log[(e*(a + b
*x))/(c + d*x)])^2 - 6*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c
+ d*x)])*(-4*a*d^2*(a + b*x)*(-1 + Log[a/b + x]) + 2*a^2*d^2*Log[a/b + x]^2
 + 4*a*b*d*(c + d*x)*(-1 + Log[c/d + x]) + d^2*(b*x*(2*a - b*x) + 2*b^2*x^2
*Log[a/b + x] - 2*a^2*Log[a + b*x]) + b^2*(d*x*(-2*c + d*x) - 2*d^2*x^2*Log
[c/d + x] + 2*c^2*Log[c + d*x]) - 4*a^2*d^2*(Log[c/d + x]*Log[(d*(a + b*x))
/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 6*(2*a*b*c*d +
 3*b^2*c*d*x + 3*a*b*d^2*x - b^2*d^2*x^2 - 2*a*b*d^2*x*Log[c/d + x] + b^2*d
^2*x^2*Log[c/d + x] - a^2*d^2*Log[a + b*x] - b^2*c^2*Log[c + d*x] - 2*a*b*c
*d*Log[c + d*x] - Log[a/b + x]*(b*d*(2*a*c + b*x*(2*c - d*x)) - 2*d^2*(a^2
- b^2*x^2)*Log[c/d + x] + (-2*b^2*c^2 + 2*a^2*d^2)*Log[(b*(c + d*x))/(b*c -
 a*d)]) + 2*(b^2*c^2 - a^2*d^2)*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] +
4*a*d*(a*d + 2*b*d*x - b*d*x*Log[c/d + x] - b*c*Log[c + d*x] + Log[a/b + x]
*(-(d*(a + b*x)) + d*(a + b*x)*Log[c/d + x] + (b*c - a*d)*Log[(b*(c + d*x))
/(b*c - a*d)]) + (b*c - a*d)*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 2*
a^2*d^2*(Log[a/b + x]^2*(Log[c/d + x] - Log[(b*(c + d*x))/(b*c - a*d)]) - 2
*Log[a/b + x]*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + 2*PolyLog[3, (d*(a
 + b*x))/(-(b*c) + a*d)])) + 12*a^2*d^2*(Log[c/d + x]^2*Log[(d*(a + b*x))/(
-(b*c) + a*d)] + 2*Log[c/d + x]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 2*P
olyLog[3, (b*(c + d*x))/(b*c - a*d)])) - 12*b^2*B^2*c^2*(Log[(-(b*c) + a*d)
/(d*(a + b*x))]*Log[(e*(a + b*x))/(c + d*x)]^2 - 2*Log[(e*(a + b*x))/(c + d
*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 2*PolyLog[3, (b*(c + d*x))/(
d*(a + b*x))])))/(12*b^3*g)
```

fricas [F] time = 0.79, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2d^2i^2x^2 + 2\,A^2cdi^2x + A^2c^2i^2 + \left(B^2d^2i^2x^2 + 2\,B^2cdi^2x + B^2c^2i^2\right)\log\left(\frac{bex+ae}{dx+c}\right)^2 + 2\left(ABd^2i^2x^2 + 2\,ABc\right.}{bgx + ag}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algor
ithm="fricas")
```

```
[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^
2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*
d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/
(b*g*x + a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.11, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^2\left(B\ln\left(\frac{(bx+a)e}{dx+c}\right)+A\right)^2}{bgx+ag}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g),x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,A^2cdi^2\left(\frac{x}{bg} - \frac{a\log(bx+a)}{b^2g}\right) + \frac{1}{2}\,A^2d^2i^2\left(\frac{2\,a^2\log(bx+a)}{b^3g} + \frac{bx^2-2\,ax}{b^2g}\right) + \frac{A^2c^2i^2\log\left(bgx+ag\right)}{bg} + \frac{\left(B^2b^2d^2i^2x^2 + \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algor
ithm="maxima")
```

```
[Out] 2*A^2*c*d*i^2*(x/(b*g) - a*log(b*x + a)/(b^2*g)) + 1/2*A^2*d^2*i^2*(2*a^2*l
og(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A^2*c^2*i^2*log(b*g*x + a*
g)/(b*g) + 1/2*(B^2*b^2*d^2*i^2*x^2 + 2*(2*b^2*c*d*i^2 - a*b*d^2*i^2)*B^2*x
 + 2*(b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*B^2*log(b*x + a))*log(d*x
+ c)^2/(b^3*g) - integrate(-(B^2*b^3*c^3*i^2*log(e)^2 + 2*A*B*b^3*c^3*i^2*l
og(e) + (B^2*b^3*d^3*i^2*log(e)^2 + 2*A*B*b^3*d^3*i^2*log(e))*x^3 + 3*(B^2*
b^3*c*d^2*i^2*log(e)^2 + 2*A*B*b^3*c*d^2*i^2*log(e))*x^2 + (B^2*b^3*d^3*i^2
*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*l
og(b*x + a)^2 + 3*(B^2*b^3*c^2*d*i^2*log(e)^2 + 2*A*B*b^3*c^2*d*i^2*log(e))
*x + 2*(B^2*b^3*c^3*i^2*log(e) + A*B*b^3*c^3*i^2 + (B^2*b^3*d^3*i^2*log(e)
+ A*B*b^3*d^3*i^2)*x^3 + 3*(B^2*b^3*c*d^2*i^2*log(e) + A*B*b^3*c*d^2*i^2)*x
^2 + 3*(B^2*b^3*c^2*d*i^2*log(e) + A*B*b^3*c^2*d*i^2)*x)*log(b*x + a) - (2*
```

```
B^2*b^3*c^3*i^2*log(e) + 2*A*B*b^3*c^3*i^2 + (2*A*B*b^3*d^3*i^2 + (2*i^2*lo
g(e) + i^2)*B^2*b^3*d^3)*x^3 + (6*A*B*b^3*c*d^2*i^2 - (a*b^2*d^3*i^2 - 2*(3
*i^2*log(e) + 2*i^2)*b^3*c*d^2)*B^2)*x^2 + 2*(3*A*B*b^3*c^2*d*i^2 + (3*b^3*
c^2*d*i^2*log(e) + 2*a*b^2*c*d^2*i^2 - a^2*b*d^3*i^2)*B^2)*x + 2*(B^2*b^3*d
^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + (4*b^3*c^2*d*i^2 - 2*a*b^2*c*d^2*i^2
 + a^2*b*d^3*i^2)*B^2*x + (b^3*c^3*i^2 + a*b^2*c^2*d*i^2 - 2*a^2*b*c*d^2*i^
2 + a^3*d^3*i^2)*B^2)*log(b*x + a))*log(d*x + c))/(b^4*d*g*x^2 + a*b^3*c*g
+ (b^4*c*g + a*b^3*d*g)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i + d\,i\,x)^2 \left(A + B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)^2}{a\,g + b\,g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x),
x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x),
 x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{i^2\left(\int \frac{A^2c^2}{a+bx}\,dx + \int \frac{A^2d^2x^2}{a+bx}\,dx + \int \frac{B^2c^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)^2}{a+bx}\,dx + \int \frac{2ABc^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{a+bx}\,dx + \int \frac{2A^2cdx}{a+bx}\,dx + \int \frac{B^2d^2x^2\log\left(\frac{ae}{c+dx} \cdots\right.}{a+bx} \cdots\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g),x)
```

```
[Out] i**2*(Integral(A**2*c**2/(a + b*x), x) + Integral(A**2*d**2*x**2/(a + b*x),
 x) + Integral(B**2*c**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a + b*x),
 x) + Integral(2*A*B*c**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x
) + Integral(2*A**2*c*d*x/(a + b*x), x) + Integral(B**2*d**2*x**2*log(a*e/(
c + d*x) + b*e*x/(c + d*x))**2/(a + b*x), x) + Integral(2*A*B*d**2*x**2*log
(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x) + Integral(2*B**2*c*d*x*log
(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a + b*x), x) + Integral(4*A*B*c*d*x*l
og(a*e/(c + d*x) + b*e*x/(c + d*x))/(a + b*x), x))/g
```

3.69 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=442

$$\frac{d^2i^2(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{b^3g^2}+\frac{4Bdi^2(bc-ad)\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^2}+\frac{2Bdi^2(bc-ad)\log\left(\frac{bc-ad}{b(c+dx}\right.}{b^3g}$$

```
[Out] -2*B^2*(-a*d+b*c)*i^2*(d*x+c)/b^2/g^2/(b*x+a)-2*B*(-a*d+b*c)*i^2*(d*x+c)*(A
+B*ln(e*(b*x+a)/(d*x+c)))/b^2/g^2/(b*x+a)+2*B*d*(-a*d+b*c)*i^2*ln((-a*d+b*c
)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^3/g^2+d^2*i^2*(b*x+a)*(A+B*ln(e*
(b*x+a)/(d*x+c)))^2/b^3/g^2-(-a*d+b*c)*i^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c
)))^2/b^2/g^2/(b*x+a)-2*d*(-a*d+b*c)*i^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2*ln(1
-b*(d*x+c)/d/(b*x+a))/b^3/g^2+2*B^2*d*(-a*d+b*c)*i^2*polylog(2,d*(b*x+a)/b/
(d*x+c))/b^3/g^2+4*B*d*(-a*d+b*c)*i^2*(A+B*ln(e*(b*x+a)/(d*x+c)))*polylog(2
,b*(d*x+c)/d/(b*x+a))/b^3/g^2+4*B^2*d*(-a*d+b*c)*i^2*polylog(3,b*(d*x+c)/d/
(b*x+a))/b^3/g^2
```

Rubi [B] time = 3.89, antiderivative size = 1219, normalized size of antiderivative = 2.76, number of steps used = 65, number of rules used = 21, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$-\frac{aB^2d^2\log^2(a+bx)i^2}{b^3g^2}+\frac{B^2d(bc-ad)\log^2(a+bx)i^2}{b^3g^2}-\frac{2ABd(bc-ad)\log^2(a+bx)i^2}{b^3g^2}-\frac{2B^2d(bc-ad)\log\left(-\frac{bc-ad}{d(a+bx)}\right.}{b^3g^2}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^
2,x]
```

```
[Out] (-2*B^2*(b*c - a*d)^2*i^2)/(b^3*g^2*(a + b*x)) - (2*B^2*d*(b*c - a*d)*i^2*L
og[a + b*x])/(b^3*g^2) - (a*B^2*d^2*i^2*Log[a + b*x]^2)/(b^3*g^2) - (2*A*B*
d*(b*c - a*d)*i^2*Log[a + b*x]^2)/(b^3*g^2) + (B^2*d*(b*c - a*d)*i^2*Log[a
+ b*x]^2)/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*Log[-((b*c - a*d)/(d*(a + b*
x)))]*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*
Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^3*g^2) - (2*B*(b*c - a*d)^2
*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^3*g^2*(a + b*x)) + (2*a*B*d^2
*i^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^3*g^2) - (2*B*d*
(b*c - a*d)*i^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^3*g^2
) + (d^2*i^2*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^2*g^2) - ((b*c -
a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^3*g^2*(a + b*x)) + (2
*d*(b*c - a*d)*i^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^
3*g^2) + (2*B^2*d*(b*c - a*d)*i^2*Log[c + d*x])/(b^3*g^2) + (2*B^2*c*d*i^2*
Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^2*g^2) - (2*B^2*d*(b*c -
 a*d)*i^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^3*g^2) - (2*B*
c*d*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(b^2*g^2) + (2*B
*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(b^3*
g^2) - (B^2*c*d*i^2*Log[c + d*x]^2)/(b^2*g^2) + (B^2*d*(b*c - a*d)*i^2*Log[
c + d*x]^2)/(b^3*g^2) + (2*a*B^2*d^2*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*
c - a*d)])/(b^3*g^2) + (4*A*B*d*(b*c - a*d)*i^2*Log[a + b*x]*Log[(b*(c + d*
x))/(b*c - a*d)])/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*Log[a + b*x]*Log[(b*
(c + d*x))/(b*c - a*d)])/(b^3*g^2) + (2*a*B^2*d^2*i^2*PolyLog[2, -((d*(a +
b*x))/(b*c - a*d))])/(b^3*g^2) + (4*A*B*d*(b*c - a*d)*i^2*PolyLog[2, -((d*(
a + b*x))/(b*c - a*d))])/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*PolyLog[2, -(
(d*(a + b*x))/(b*c - a*d))])/(b^3*g^2) + (2*B^2*c*d*i^2*PolyLog[2, (b*(c +
d*x))/(b*c - a*d)])/(b^2*g^2) - (2*B^2*d*(b*c - a*d)*i^2*PolyLog[2, (b*(c +
```

```
 d*x))/(b*c - a*d)])/(b^3*g^2) + (4*B^2*d*(b*c - a*d)*i^2*Log[(e*(a + b*x))
/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^3*g^2) + (4*B^2*d
*(b*c - a*d)*i^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^3*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
```

```
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
```

```
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(69c+69dx)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^2}\,dx = \int \left(\frac{4761d^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^2} + \frac{4761(bc-ad)^2 \left(A+B\log\left(\frac{e(a}{c}\right.\right.}{b^2g^2(a+bx)^2}\right.$$

$$= \frac{(4761d^2)\int \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx}{b^2g^2} + \frac{(9522d(bc-ad))\int \frac{(A+B\log}{a}}{b^2g^2}$$

$$= \frac{4761d^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^2} - \frac{4761(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{b^3g^2(a+bx)}$$

$$= \frac{4761d^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^2} - \frac{4761(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{b^3g^2(a+bx)}$$

$$= \frac{4761d^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^2} - \frac{4761(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{b^3g^2(a+bx)}$$

$$= \frac{4761d^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^2} - \frac{4761(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{b^3g^2(a+bx)}$$

$$= -\frac{9522B(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^2(a+bx)} + \frac{9522aBd^2\log(a+bx)\left(\right.}{b^3g^2}$$

$$= -\frac{9522B(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^2(a+bx)} + \frac{9522aBd^2\log(a+bx)\left(\right.}{b^3g^2}$$

$$= -\frac{9522B^2d(bc-ad)\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g^2} - \frac{9522B(bc-ad)^2\left(\right.}{b^3g^2(a}$$

$$= -\frac{9522B^2(bc-ad)^2}{b^3g^2(a+bx)} - \frac{9522B^2d(bc-ad)\log(a+bx)}{b^3g^2} - \frac{9522B^2d(bc}{}$$

$$= -\frac{9522B^2(bc-ad)^2}{b^3g^2(a+bx)} - \frac{9522B^2d(bc-ad)\log(a+bx)}{b^3g^2} - \frac{9522ABd(bc}{}$$

$$= -\frac{9522B^2(bc-ad)^2}{b^3g^2(a+bx)} - \frac{9522B^2d(bc-ad)\log(a+bx)}{b^3g^2} - \frac{4761aB^2d^2 l}{b^3}$$

$$= -\frac{9522B^2(bc-ad)^2}{b^3g^2(a+bx)} - \frac{9522B^2d(bc-ad)\log(a+bx)}{b^3g^2} - \frac{4761aB^2d^2 l}{b^3}$$

Mathematica [B] time = 6.92, size = 2652, normalized size = 6.00

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x)^2,x]
```

```
[Out] (i^2*(3*A^2*b*d^2*x - (3*A^2*(b*c - a*d)^2)/(a + b*x) + 6*A^2*d*(b*c - a*d)
*Log[a + b*x] - (6*A*b^2*B*c^2*(-(d*(a + b*x)*Log[c/d + x]) + d*(a + b*x)*L
og[(d*(a + b*x))/(-(b*c) + a*d)] + (b*c - a*d)*(1 + Log[(e*(a + b*x))/(c +
d*x)])))/((b*c - a*d)*(a + b*x)) + (3*b^2*B^2*c^2*(-2*b*c + 2*a*d - 2*d*(a
+ b*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] - 2*d*(a +
 b*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - (b*c - a*d)*Log[(e*(a + b
*x))/(c + d*x)]^2 + 2*d*(a + b*x)*Log[c + d*x] - 2*d*(a + b*x)*Log[(e*(a +
b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + d*(a + b*x)*(Log[a + b*x]
*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b
*x))/(-(b*c) + a*d)]) + d*(a + b*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[
(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog
[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(a + b*x)) + 6*A*b*B*c*d*(Lo
g[a/b + x]^2 - 2*Log[a/b + x]*Log[a + b*x] - 2*Log[c/d + x]*Log[(d*(a + b*x
))/(-(b*c) + a*d)] + 2*Log[a + b*x]*((a*d)/(b*c - a*d) + Log[c/d + x] + Log
[(e*(a + b*x))/(c + d*x)]) + 2*a*((a + b*x)^(-1) + Log[(e*(a + b*x))/(c + d
*x)]/(a + b*x) + (d*Log[c + d*x])/(-(b*c) + a*d)) - 2*PolyLog[2, (b*(c + d*
x))/(b*c - a*d)]) + 6*A*B*d^2*((a + b*x)*(-1 + Log[a/b + x]) - a*Log[a/b +
x]^2 - (a^2*(1 + Log[a/b + x]))/(a + b*x) - b*(c/d + x)*(-1 + Log[c/d + x])
 + (a^2*Log[c/d + x])/(a + b*x) + (b*x - a^2/(a + b*x) - 2*a*Log[a + b*x])*
(-Log[a/b + x] + Log[c/d + x] + Log[(e*(a + b*x))/(c + d*x)]) + (a^2*d*(Log
[a + b*x] - Log[c + d*x]))/(-(b*c) + a*d) + 2*a*(Log[c/d + x]*Log[(d*(a + b
*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + B^2*d^2*(6
*b*x - 6*(a + b*x)*Log[a/b + x] + 3*(a + b*x)*Log[a/b + x]^2 - 2*a*Log[a/b
+ x]^3 - (3*a^2*(2 + 2*Log[a/b + x] + Log[a/b + x]^2))/(a + b*x) + (3*b*(2*
d*x - 2*(c + d*x)*Log[c/d + x] + (c + d*x)*Log[c/d + x]^2))/d + 3*(b*x - a^
2/(a + b*x) - 2*a*Log[a + b*x])*(-Log[a/b + x] + Log[c/d + x] + Log[(e*(a +
 b*x))/(c + d*x)])^2 - (6*(a*d + 2*b*d*x - b*d*x*Log[c/d + x] - b*c*Log[c +
 d*x] + Log[a/b + x]*(-(d*(a + b*x)) + d*(a + b*x)*Log[c/d + x] + (b*c - a*
d)*Log[(b*(c + d*x))/(b*c - a*d)]) + (b*c - a*d)*PolyLog[2, (d*(a + b*x))/(
-(b*c) + a*d)]))/d + (3*a^2*(d*(a + b*x)*Log[a/b + x]^2 + 2*((-(b*c) + a*d)
*Log[c/d + x] + d*(a + b*x)*(Log[a + b*x] - Log[c + d*x])) - 2*Log[a/b + x]
*((b*c - a*d)*Log[c/d + x] + d*(a + b*x)*Log[(b*(c + d*x))/(b*c - a*d)]) -
2*d*(a + b*x)*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))/((-(b*c) + a*d)*(a
 + b*x)) + (3*a^2*(-(b*(c + d*x)*Log[c/d + x]^2) + 2*d*(a + b*x)*Log[c/d +
x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*d*(a + b*x)*PolyLog[2, (b*(c + d*x
))/(b*c - a*d)]))/((b*c - a*d)*(a + b*x)) + 6*(-Log[a/b + x] + Log[c/d + x]
 + Log[(e*(a + b*x))/(c + d*x)])*((a + b*x)*(-1 + Log[a/b + x]) - a*Log[a/b
 + x]^2 - (a^2*(1 + Log[a/b + x]))/(a + b*x) - b*(c/d + x)*(-1 + Log[c/d +
x]) + (a^2*Log[c/d + x])/(a + b*x) + (a^2*d*(Log[a + b*x] - Log[c + d*x]))/
(-(b*c) + a*d) + 2*a*(Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Poly
Log[2, (b*(c + d*x))/(b*c - a*d)])) + 6*a*(Log[a/b + x]^2*(Log[c/d + x] - L
og[(b*(c + d*x))/(b*c - a*d)]) - 2*Log[a/b + x]*PolyLog[2, (d*(a + b*x))/(-
(b*c) + a*d)] + 2*PolyLog[3, (d*(a + b*x))/(-(b*c) + a*d)]) - 6*a*(Log[c/d
+ x]^2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*Log[c/d + x]*PolyLog[2, (b*(c
+ d*x))/(b*c - a*d)] - 2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])) + (2*b*B^2
*c*d*(6*b*c - 6*a*d - (6*b^2*c*x)/(a + b*x) + (6*a*b*d*x)/(a + b*x) + 6*a*d
*Log[a/b + x] + 3*b*c*Log[a/b + x]^2 - 3*a*d*Log[a/b + x]^2 - 6*b*c*Log[c/d
 + x] + 6*b*c*Log[a + b*x] - 6*a*d*Log[a + b*x] - 6*b*c*Log[a/b + x]*Log[a
+ b*x] + 6*a*d*Log[a/b + x]*Log[a + b*x] + 6*b*c*Log[c/d + x]*Log[a + b*x]
- 6*a*d*Log[c/d + x]*Log[a + b*x] - 6*b*c*Log[c/d + x]*Log[(d*(a + b*x))/(-
(b*c) + a*d)] + 6*a*d*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] - (6*b
*(b*c - a*d)*x*Log[(e*(a + b*x))/(c + d*x)])/(a + b*x) + 6*b*c*Log[a + b*x]
*Log[(e*(a + b*x))/(c + d*x)] - 6*a*d*Log[a + b*x]*Log[(e*(a + b*x))/(c + d
*x)] + 3*a*d*Log[(e*(a + b*x))/(c + d*x)]^2 + 3*b*d*x*Log[(e*(a + b*x))/(c
+ d*x)]^2 - (3*b^2*x*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]^2)/(a + b*x) -
3*b*c*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(e*(a + b*x))/(c + d*x)]^2 - a*
d*Log[(e*(a + b*x))/(c + d*x)]^3 + 6*b*c*Log[(e*(a + b*x))/(c + d*x)]*Log[(
b*c - a*d)/(b*c + b*d*x)] - 6*a*d*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a
*d)/(b*c + b*d*x)] + 3*a*d*Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(
```

```
b*c + b*d*x)] + 6*(b*c - a*d + a*d*Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2,
 (d*(a + b*x))/(b*(c + d*x))] - 6*(b*c - a*d)*PolyLog[2, (b*(c + d*x))/(b*c
 - a*d)] + 6*b*c*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(
a + b*x))] - 6*a*d*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] + 6*b*c*PolyLog[
3, (b*(c + d*x))/(d*(a + b*x))]))/(b*c - a*d)))/(3*b^3*g^2)
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2d^2i^2x^2 + 2\,A^2cdi^2x + A^2c^2i^2 + \left(B^2d^2i^2x^2 + 2\,B^2cdi^2x + B^2c^2i^2\right)\log\left(\frac{bex+ae}{dx+c}\right)^2 + 2\left(ABd^2i^2x^2 + 2\,ABc\right.}{b^2g^2x^2 + 2\,abg^2x + a^2g^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, alg
orithm="fricas")
```

```
[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^
2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*
d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/
(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.14, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^2\left(B\ln\left(\frac{(bx+a)e}{dx+c}\right)+A\right)^2}{\left(bgx+ag\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, alg
orithm="maxima")
```

```
[Out] -A^2*(a^2/(b^4*g^2*x + a*b^3*g^2) - x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g^2
))*d^2*i^2 + 2*A^2*c*d*i^2*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g
^2)) - 2*A*B*c^2*i^2*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^2*g^2*x + a*b
*g^2) + 1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*
log(d*x + c)/((b^2*c - a*b*d)*g^2)) - A^2*c^2*i^2/(b^2*g^2*x + a*b*g^2) + (
B^2*b^2*d^2*i^2*x^2 + B^2*a*b*d^2*i^2*x - (b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^
2*d^2*i^2)*B^2 + 2*((b^2*c*d*i^2 - a*b*d^2*i^2)*B^2*x + (a*b*c*d*i^2 - a^2*
d^2*i^2)*B^2)*log(b*x + a))*log(d*x + c)^2/(b^4*g^2*x + a*b^3*g^2) - integr
```

```
ate(-(B^2*b^3*c^3*i^2*log(e)^2 + (B^2*b^3*d^3*i^2*log(e)^2 + 2*A*B*b^3*d^3*
i^2*log(e))*x^3 + 3*(B^2*b^3*c*d^2*i^2*log(e)^2 + 2*A*B*b^3*c*d^2*i^2*log(e
))*x^2 + (B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i
^2*x + B^2*b^3*c^3*i^2)*log(b*x + a)^2 + (3*B^2*b^3*c^2*d*i^2*log(e)^2 + 4*
A*B*b^3*c^2*d*i^2*log(e))*x + 2*(B^2*b^3*c^3*i^2*log(e) + (B^2*b^3*d^3*i^2*
log(e) + A*B*b^3*d^3*i^2)*x^3 + 3*(B^2*b^3*c*d^2*i^2*log(e) + A*B*b^3*c*d^2
*i^2)*x^2 + (3*B^2*b^3*c^2*d*i^2*log(e) + 2*A*B*b^3*c^2*d*i^2)*x)*log(b*x +
 a) - 2*((A*B*b^3*d^3*i^2 + (i^2*log(e) + i^2)*B^2*b^3*d^3)*x^3 + (b^3*c^3*
i^2*log(e) - a*b^2*c^2*d*i^2 + 2*a^2*b*c*d^2*i^2 - a^3*d^3*i^2)*B^2 + (3*A*
B*b^3*c*d^2*i^2 + (3*b^3*c*d^2*i^2*log(e) + 2*a*b^2*d^3*i^2)*B^2)*x^2 + (2*
A*B*b^3*c^2*d*i^2 + (2*a*b^2*c*d^2*i^2 + (3*i^2*log(e) - i^2)*b^3*c^2*d)*B^
2)*x + (B^2*b^3*d^3*i^2*x^3 + (5*b^3*c*d^2*i^2 - 2*a*b^2*d^3*i^2)*B^2*x^2 +
 (3*b^3*c^2*d*i^2 + 4*a*b^2*c*d^2*i^2 - 4*a^2*b*d^3*i^2)*B^2*x + (b^3*c^3*i
^2 + 2*a^2*b*c*d^2*i^2 - 2*a^3*d^3*i^2)*B^2)*log(b*x + a))*log(d*x + c))/(b
^5*d*g^2*x^3 + a^2*b^3*c*g^2 + (b^5*c*g^2 + 2*a*b^4*d*g^2)*x^2 + (2*a*b^4*c
*g^2 + a^2*b^3*d*g^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)^2}{\left(a\,g+b\,g\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
2,x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**2,x)
```

```
[Out] Timed out
```

3.70 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3}\,dx$

Optimal. Leaf size=387

$$\frac{2Bd^2i^2\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^3g^3}-\frac{d^2i^2\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{b^3g^3}-\frac{di^2(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{b^2g^3(a+bx)}$$

```
[Out] -2*B^2*d*i^2*(d*x+c)/b^2/g^3/(b*x+a)-1/4*B^2*i^2*(d*x+c)^2/b/g^3/(b*x+a)^2-
2*B*d*i^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2/g^3/(b*x+a)-1/2*B*i^2*(d*
x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/b/g^3/(b*x+a)^2-d*i^2*(d*x+c)*(A+B*ln(e*
(b*x+a)/(d*x+c)))^2/b^2/g^3/(b*x+a)-1/2*i^2*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*
x+c)))^2/b/g^3/(b*x+a)^2-d^2*i^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2*ln(1-b*(d*x+
c)/d/(b*x+a))/b^3/g^3+2*B*d^2*i^2*(A+B*ln(e*(b*x+a)/(d*x+c)))*polylog(2,b*(
d*x+c)/d/(b*x+a))/b^3/g^3+2*B^2*d^2*i^2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^3/
g^3
```

Rubi [B] time = 4.06, antiderivative size = 932, normalized size of antiderivative = 2.41, number of steps used = 73, number of rules used = 20, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{3B^2d^2\log^2(a+bx)i^2}{2b^3g^3}-\frac{ABd^2\log^2(a+bx)i^2}{b^3g^3}-\frac{B^2d^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)i^2}{b^3g^3}-\frac{B^2d^2\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g^3}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^
3,x]
```

```
[Out] -(B^2*(b*c - a*d)^2*i^2)/(4*b^3*g^3*(a + b*x)^2) - (5*B^2*d*(b*c - a*d)*i^2
)/(2*b^3*g^3*(a + b*x)) - (5*B^2*d^2*i^2*Log[a + b*x])/(2*b^3*g^3) - (A*B*d
^2*i^2*Log[a + b*x]^2)/(b^3*g^3) + (3*B^2*d^2*i^2*Log[a + b*x]^2)/(2*b^3*g^
3) - (B^2*d^2*i^2*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[(e*(a + b*x))/(c +
d*x)]^2)/(b^3*g^3) - (B^2*d^2*i^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]
^2)/(b^3*g^3) - (B*(b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/
(2*b^3*g^3*(a + b*x)^2) - (3*B*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(
c + d*x)]))/(b^3*g^3*(a + b*x)) - (3*B*d^2*i^2*Log[a + b*x]*(A + B*Log[(e*(
a + b*x))/(c + d*x)]))/(b^3*g^3) - ((b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*
x))/(c + d*x)])^2)/(2*b^3*g^3*(a + b*x)^2) - (2*d*(b*c - a*d)*i^2*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)])^2)/(b^3*g^3*(a + b*x)) + (d^2*i^2*Log[a + b*x]*
(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^3*g^3) + (5*B^2*d^2*i^2*Log[c +
d*x])/(2*b^3*g^3) - (3*B^2*d^2*i^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c
+ d*x])/(b^3*g^3) + (3*B*d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c
 + d*x])/(b^3*g^3) + (3*B^2*d^2*i^2*Log[c + d*x]^2)/(2*b^3*g^3) + (2*A*B*d^
2*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g^3) - (3*B^2*d^2*i
^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g^3) + (2*A*B*d^2*i^2*
PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g^3) - (3*B^2*d^2*i^2*PolyLo
g[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g^3) - (3*B^2*d^2*i^2*PolyLog[2, (
b*(c + d*x))/(b*c - a*d)])/(b^3*g^3) + (2*B^2*d^2*i^2*Log[(e*(a + b*x))/(c
+ d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^3*g^3) + (2*B^2*d^2*i
^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^3*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
```

```
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(70c+70dx)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3}\,dx = \int \left(\frac{4900(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^3(a+bx)^3} + \frac{9800d(bc-ad)\left(A+B\right.}{b^2g^3(a+b}\right.$$

$$= \frac{\left(4900d^2\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}dx}{b^2g^3} + \frac{(9800d(bc-ad))\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{(a+bx)^2}}{b^2g^3}$$

$$= -\frac{2450(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^3(a+bx)^2} - \frac{9800d(bc-ad)\left(A+B\,\mathrm{lo}\right.}{b^3g^3(a+bx)}$$

$$= -\frac{2450(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^3(a+bx)^2} - \frac{9800d(bc-ad)\left(A+B\,\mathrm{lo}\right.}{b^3g^3(a+bx)}$$

$$= -\frac{2450(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^3(a+bx)^2} - \frac{9800d(bc-ad)\left(A+B\,\mathrm{lo}\right.}{b^3g^3(a+bx)}$$

$$= -\frac{2450(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^3(a+bx)^2} - \frac{9800d(bc-ad)\left(A+B\,\mathrm{lo}\right.}{b^3g^3(a+bx)}$$

$$= -\frac{2450B(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^3(a+bx)^2} - \frac{14700Bd(bc-ad)\left(A+\right.}{b^3g^3(a+b}$$

$$= -\frac{2450B(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^3(a+bx)^2} - \frac{14700Bd(bc-ad)\left(A+\right.}{b^3g^3(a+b}$$

$$= -\frac{4900B^2d^2\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{b^3g^3} - \frac{2450B(bc-ad)^2\left(A+B\,\mathrm{lo}\right.}{b^3g^3(a+bx)^2}$$

$$= -\frac{1225B^2(bc-ad)^2}{b^3g^3(a+bx)^2} - \frac{12250B^2d(bc-ad)}{b^3g^3(a+bx)} - \frac{12250B^2d^2\log(a+bx)}{b^3g^3}$$

$$= -\frac{1225B^2(bc-ad)^2}{b^3g^3(a+bx)^2} - \frac{12250B^2d(bc-ad)}{b^3g^3(a+bx)} - \frac{12250B^2d^2\log(a+bx)}{b^3g^3}$$

$$= -\frac{1225B^2(bc-ad)^2}{b^3g^3(a+bx)^2} - \frac{12250B^2d(bc-ad)}{b^3g^3(a+bx)} - \frac{12250B^2d^2\log(a+bx)}{b^3g^3}$$

$$= -\frac{1225B^2(bc-ad)^2}{b^3g^3(a+bx)^2} - \frac{12250B^2d(bc-ad)}{b^3g^3(a+bx)} - \frac{12250B^2d^2\log(a+bx)}{b^3g^3}$$

Mathematica [B] time = 7.13, size = 3582, normalized size = 9.26

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x)^3,x]
```

```
[Out] (i^2*(-6*A^2*(b*c - a*d)^4 + 24*A^2*d*(-(b*c) + a*d)^3*(a + b*x) + 12*A^2*d
^2*(b*c - a*d)^2*(a + b*x)^2*Log[a + b*x] - 6*A*b^2*B*c^2*(b^2*c^2 - 4*a*b*
c*d + a^2*d^2 - 2*b^2*c*d*x - 2*a*b*d^2*x - 2*b^2*d^2*x^2 + 2*d^2*(a + b*x)
^2*Log[c/d + x] - 2*d^2*(a + b*x)^2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*b
^2*c^2*Log[(e*(a + b*x))/(c + d*x)] - 4*a*b*c*d*Log[(e*(a + b*x))/(c + d*x)
] + 2*a^2*d^2*Log[(e*(a + b*x))/(c + d*x)]) - 12*A*b*B*c*d*(3*a*b^2*c^2 - 4
*a^2*b*c*d + a^3*d^2 + 4*b^3*c^2*x - 6*a*b^2*c*d*x + 2*a^2*b*d^2*x - 2*d*(-
2*b*c + a*d)*(a + b*x)^2*Log[a + b*x] + 2*(b*c - a*d)^2*(a + 2*b*x)*Log[(e*
(a + b*x))/(c + d*x)] - 4*a^2*b*c*d*Log[c + d*x] + 2*a^3*d^2*Log[c + d*x] -
 8*a*b^2*c*d*x*Log[c + d*x] + 4*a^2*b*d^2*x*Log[c + d*x] - 4*b^3*c*d*x^2*Lo
g[c + d*x] + 2*a*b^2*d^2*x^2*Log[c + d*x]) - 3*b^2*B^2*c^2*((b*c - a*d)^2 +
 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*(b*c - a
*d)^2*Log[(e*(a + b*x))/(c + d*x)] + 4*d*(-(b*c) + a*d)*(a + b*x)*Log[(e*(a
 + b*x))/(c + d*x)] - 4*d^2*(a + b*x)^2*Log[a + b*x]*Log[(e*(a + b*x))/(c +
 d*x)] + 2*(b*c - a*d)^2*Log[(e*(a + b*x))/(c + d*x)]^2 + 2*d^2*(a + b*x)^2
*Log[c + d*x] - 4*d*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a
+ b*x)*Log[c + d*x]) - 4*d^2*(a + b*x)^2*Log[(e*(a + b*x))/(c + d*x)]*Log[(
b*c - a*d)/(b*c + b*d*x)] + 2*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] -
 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a
*d)]) + 2*d^2*(a + b*x)^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*
x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c
+ d*x))/(b*c - a*d)])) + 6*A*B*d^2*(2*(b*c - a*d)^2*(a + b*x)^2*Log[a/b + x
]^2 + 8*a*(b*c - a*d)^2*(a + b*x)*(1 + Log[a/b + x]) - a^2*(b*c - a*d)^2*(1
 + 2*Log[a/b + x]) - 2*(b*c - a*d)^2*(a*(3*a + 4*b*x) + 2*(a + b*x)^2*Log[a
 + b*x])*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x)]) + 8*a
*(b*c - a*d)*(a + b*x)*((-(b*c) + a*d)*Log[c/d + x] + d*(a + b*x)*(Log[a +
b*x] - Log[c + d*x])) + 2*a^2*((b*c - a*d)^2*Log[c/d + x] + d*(a + b*x)*(b*
c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x])) - 4*(b*c -
a*d)^2*(a + b*x)^2*(Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + PolyLo
g[2, (b*(c + d*x))/(b*c - a*d)])) - 6*b*B^2*c*d*(4*(b*c - a*d)^2*(a + b*x)*
(2 + 2*Log[a/b + x] + Log[a/b + x]^2) - a*(b*c - a*d)^2*(1 + 2*Log[a/b + x]
 + 2*Log[a/b + x]^2) + 2*(b*c - a*d)^2*(a + 2*b*x)*(-Log[a/b + x] + Log[c/d
 + x] + Log[(e*(a + b*x))/(c + d*x)])^2 - 2*(Log[a/b + x] - Log[c/d + x] -
Log[(e*(a + b*x))/(c + d*x)])*(4*(b*c - a*d)^2*(a + b*x)*(1 + Log[a/b + x])
 - a*(b*c - a*d)^2*(1 + 2*Log[a/b + x]) - 4*(b*c - a*d)*(a + b*x)*((b*c - a
*d)*Log[c/d + x] - d*(a + b*x)*(Log[a + b*x] - Log[c + d*x])) + 2*a*((b*c -
 a*d)^2*Log[c/d + x] + d*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] -
d*(a + b*x)*Log[c + d*x]))) + 4*(b*c - a*d)*(a + b*x)*(d*(a + b*x)*Log[a/b
+ x]^2 + 2*((-(b*c) + a*d)*Log[c/d + x] + d*(a + b*x)*(Log[a + b*x] - Log[c
 + d*x])) - 2*Log[a/b + x]*((b*c - a*d)*Log[c/d + x] + d*(a + b*x)*Log[(b*(
c + d*x))/(b*c - a*d)]) - 2*d*(a + b*x)*PolyLog[2, (d*(a + b*x))/(-(b*c) +
a*d)]) - 2*a*(d*(-(b*c) + a*d)*(a + b*x) - (b*c - a*d)^2*(1 + 2*Log[a/b + x
])*Log[c/d + x] - d^2*(a + b*x)^2*Log[a + b*x] + d^2*(a + b*x)^2*Log[c + d*
x] - d*(a + b*x)*(d*(a + b*x)*Log[a/b + x]^2 + 2*(b*c - a*d)*(1 + Log[a/b +
 x]) - 2*d*(a + b*x)*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog
[2, (d*(a + b*x))/(-(b*c) + a*d)]))) + 4*(b*c - a*d)*(a + b*x)*(Log[c/d + x
]*(b*(c + d*x)*Log[c/d + x] - 2*d*(a + b*x)*Log[(d*(a + b*x))/(-(b*c) + a*d
)]) - 2*d*(a + b*x)*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 2*a*(2*d*(-(b*
c) + a*d)*(a + b*x)*Log[c/d + x] - (b*c - a*d)^2*Log[c/d + x]^2 + d^2*(a +
b*x)^2*Log[c/d + x]^2 + 2*d^2*(a + b*x)^2*Log[a + b*x] - 2*d^2*(a + b*x)^2*
Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] - 2*d^2*(a + b*x)^2*Log[c +
d*x] - 2*d^2*(a + b*x)^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + B^2*d^2*
(4*(b*c - a*d)^2*(a + b*x)^2*Log[a/b + x]^3 + 24*a*(b*c - a*d)^2*(a + b*x)*
(2 + 2*Log[a/b + x] + Log[a/b + x]^2) - 3*a^2*(b*c - a*d)^2*(1 + 2*Log[a/b
+ x] + 2*Log[a/b + x]^2) + 6*(b*c - a*d)^2*(a*(3*a + 4*b*x) + 2*(a + b*x)^2
*Log[a + b*x])*(-Log[a/b + x] + Log[c/d + x] + Log[(e*(a + b*x))/(c + d*x)]
)^2 + 24*a*(b*c - a*d)*(a + b*x)*(Log[c/d + x]*(b*(c + d*x)*Log[c/d + x] -
2*d*(a + b*x)*Log[(d*(a + b*x))/(-(b*c) + a*d)]) - 2*d*(a + b*x)*PolyLog[2,
 (b*(c + d*x))/(b*c - a*d)]) + 6*a^2*(2*d*(-(b*c) + a*d)*(a + b*x)*Log[c/d
```

```
+ x] - (b*c - a*d)^2*Log[c/d + x]^2 + d^2*(a + b*x)^2*Log[c/d + x]^2 + 2*d^
2*(a + b*x)^2*Log[a + b*x] - 2*d^2*(a + b*x)^2*Log[c/d + x]*Log[(d*(a + b*x
))/(-(b*c) + a*d)] - 2*d^2*(a + b*x)^2*Log[c + d*x] - 2*d^2*(a + b*x)^2*Pol
yLog[2, (b*(c + d*x))/(b*c - a*d)]) - 6*(Log[a/b + x] - Log[c/d + x] - Log[
(e*(a + b*x))/(c + d*x)])*(2*(b*c - a*d)^2*(a + b*x)^2*Log[a/b + x]^2 + 8*a
*(b*c - a*d)^2*(a + b*x)*(1 + Log[a/b + x]) - a^2*(b*c - a*d)^2*(1 + 2*Log[
a/b + x]) - 8*a*(b*c - a*d)*(a + b*x)*((b*c - a*d)*Log[c/d + x] - d*(a + b*
x)*(Log[a + b*x] - Log[c + d*x])) + 2*a^2*((b*c - a*d)^2*Log[c/d + x] + d*(
a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]))
 - 4*(b*c - a*d)^2*(a + b*x)^2*(Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*
d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 6*(4*a*(b*c - a*d)*(a + b*x
)*(d*(a + b*x)*Log[a/b + x]^2 + 2*((-(b*c) + a*d)*Log[c/d + x] + d*(a + b*x
)*(Log[a + b*x] - Log[c + d*x])) - 2*Log[a/b + x]*((b*c - a*d)*Log[c/d + x]
 + d*(a + b*x)*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*d*(a + b*x)*PolyLog[2, (
d*(a + b*x))/(-(b*c) + a*d)]) - a^2*(d*(-(b*c) + a*d)*(a + b*x) - (b*c - a*
d)^2*(1 + 2*Log[a/b + x])*Log[c/d + x] - d^2*(a + b*x)^2*Log[a + b*x] + d^2
*(a + b*x)^2*Log[c + d*x] - d*(a + b*x)*(d*(a + b*x)*Log[a/b + x]^2 + 2*(b*
c - a*d)*(1 + Log[a/b + x]) - 2*d*(a + b*x)*(Log[a/b + x]*Log[(b*(c + d*x))
/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))) - 2*(b*c - a*d)
^2*(a + b*x)^2*(Log[a/b + x]^2*(Log[c/d + x] - Log[(b*(c + d*x))/(b*c - a*d
)]) - 2*Log[a/b + x]*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + 2*PolyLog[3
, (d*(a + b*x))/(-(b*c) + a*d)])) + 12*(b*c - a*d)^2*(a + b*x)^2*(Log[c/d +
 x]^2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*Log[c/d + x]*PolyLog[2, (b*(c +
 d*x))/(b*c - a*d)] - 2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)]))))/(12*b^3*(
b*c - a*d)^2*g^3*(a + b*x)^2)
```

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2d^2i^2x^2 + 2\,A^2cdi^2x + A^2c^2i^2 + \left(B^2d^2i^2x^2 + 2\,B^2cdi^2x + B^2c^2i^2\right)\log\left(\frac{bex+ae}{dx+c}\right)^2 + 2\left(ABd^2i^2x^2 + 2\,ABc\right.}{b^3g^3x^3 + 3\,ab^2g^3x^2 + 3\,a^2bg^3x + a^3g^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, alg
orithm="fricas")
```

```
[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^
2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*
d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log((b*e*x + a*e)/(d*x + c)))/
(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.05, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B\ln\left(\frac{(bx+a)e}{dx+c}\right) + A\right)^2}{\left(bgx + ag\right)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, alg
orithm="maxima")
```

```
[Out] -A*B*c*d*i^2*(2*(2*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4*g^3*x
^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + (3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*
x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c
- a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*
d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c^2 - 2*a*b^
3*c*d + a^2*b^2*d^2)*g^3)) + 1/2*A^2*d^2*i^2*((4*a*b*x + 3*a^2)/(b^5*g^3*x^
2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*log(b*x + a)/(b^3*g^3)) + 1/2*A*B*c^2*
i^2*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*
b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*
x + c))/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) + 2*d^2*log(b*x + a)/((b^
3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)/((b^3*c^2 - 2*a*
b^2*c*d + a^2*b*d^2)*g^3)) - (2*b*x + a)*A^2*c*d*i^2/(b^4*g^3*x^2 + 2*a*b^3
*g^3*x + a^2*b^2*g^3) - 1/2*A^2*c^2*i^2/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*
b*g^3) - 1/2*(4*(b^2*c*d*i^2 - a*b*d^2*i^2)*B^2*x + (b^2*c^2*i^2 + 2*a*b*c*
d*i^2 - 3*a^2*d^2*i^2)*B^2 - 2*(B^2*b^2*d^2*i^2*x^2 + 2*B^2*a*b*d^2*i^2*x +
 B^2*a^2*d^2*i^2)*log(b*x + a))*log(d*x + c)^2/(b^5*g^3*x^2 + 2*a*b^4*g^3*x
 + a^2*b^3*g^3) - integrate(-(3*B^2*b^3*c^2*d*i^2*x*log(e)^2 + B^2*b^3*c^3*
i^2*log(e)^2 + (B^2*b^3*d^3*i^2*log(e)^2 + 2*A*B*b^3*d^3*i^2*log(e))*x^3 +
(3*B^2*b^3*c*d^2*i^2*log(e)^2 + 2*A*B*b^3*c*d^2*i^2*log(e))*x^2 + (B^2*b^3*
d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3
*i^2)*log(b*x + a)^2 + 2*(3*B^2*b^3*c^2*d*i^2*x*log(e) + B^2*b^3*c^3*i^2*lo
g(e) + (B^2*b^3*d^3*i^2*log(e) + A*B*b^3*d^3*i^2)*x^3 + (3*B^2*b^3*c*d^2*i^
2*log(e) + A*B*b^3*c*d^2*i^2)*x^2)*log(b*x + a) + ((6*a*b^2*c*d^2*i^2 - 7*a
^2*b*d^3*i^2 - (6*i^2*log(e) - i^2)*b^3*c^2*d)*B^2*x - 2*(B^2*b^3*d^3*i^2*l
og(e) + A*B*b^3*d^3*i^2)*x^3 - (2*b^3*c^3*i^2*log(e) - a*b^2*c^2*d*i^2 - 2*
a^2*b*c*d^2*i^2 + 3*a^3*d^3*i^2)*B^2 - 2*(A*B*b^3*c*d^2*i^2 + (2*a*b^2*d^3*
i^2 + (3*i^2*log(e) - 2*i^2)*b^3*c*d^2)*B^2)*x^2 - 2*(2*B^2*b^3*d^3*i^2*x^3
 + 3*(b^3*c*d^2*i^2 + a*b^2*d^3*i^2)*B^2*x^2 + 3*(b^3*c^2*d*i^2 + a^2*b*d^3
*i^2)*B^2*x + (b^3*c^3*i^2 + a^3*d^3*i^2)*B^2)*log(b*x + a))*log(d*x + c))/
(b^6*d*g^3*x^4 + a^3*b^3*c*g^3 + (b^6*c*g^3 + 3*a*b^5*d*g^3)*x^3 + 3*(a*b^5
*c*g^3 + a^2*b^4*d*g^3)*x^2 + (3*a^2*b^4*c*g^3 + a^3*b^3*d*g^3)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,i+d\,i\,x\right)}^2\,{\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}^2}{{\left(a\,g+b\,g\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
3,x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$i^2\left(\int \frac{A^2c^2}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx+\int \frac{A^2d^2x^2}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx+\int \frac{B^2c^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)^2}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx+\int \frac{2ABc^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx+\int\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**3,x)
```

```
[Out] i**2*(Integral(A**2*c**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x
) + Integral(A**2*d**2*x**2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3)
, x) + Integral(B**2*c**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a**3 + 3
*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*A*B*c**2*log(a*e/(c
 + d*x) + b*e*x/(c + d*x))/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3),
 x) + Integral(2*A**2*c*d*x/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3)
, x) + Integral(B**2*d**2*x**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(a**
3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*A*B*d**2*x**2*
log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b
**3*x**3), x) + Integral(2*B**2*c*d*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))*
*2/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integral(4*A*B*c*d
*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2
+ b**3*x**3), x))/g**3
```

3.71 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^4}\,dx$

Optimal. Leaf size=147

$$-\frac{i^2(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{3g^4(a+bx)^3(bc-ad)}-\frac{2Bi^2(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{9g^4(a+bx)^3(bc-ad)}-\frac{2B^2i^2(c+dx)^3}{27g^4(a+bx)^3(bc-ad)}$$

```
[Out] -2/27*B^2*i^2*(d*x+c)^3/(-a*d+b*c)/g^4/(b*x+a)^3-2/9*B*i^2*(d*x+c)^3*(A+B*l
n(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)/g^4/(b*x+a)^3-1/3*i^2*(d*x+c)^3*(A+B*ln(e*
(b*x+a)/(d*x+c)))^2/(-a*d+b*c)/g^4/(b*x+a)^3
```

Rubi [C] time = 3.13, antiderivative size = 827, normalized size of antiderivative = 5.63, number of steps used = 92, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.262, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i^2\log^2(a+bx)d^3}{3b^3(bc-ad)g^4}+\frac{B^2i^2\log^2(c+dx)d^3}{3b^3(bc-ad)g^4}-\frac{2B^2i^2\log(a+bx)d^3}{9b^3(bc-ad)g^4}-\frac{2Bi^2\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)d^3}{3b^3(bc-ad)g^4}+\frac{2B\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^
4,x]
```

```
[Out] (-2*B^2*(b*c - a*d)^2*i^2)/(27*b^3*g^4*(a + b*x)^3) - (2*B^2*d*(b*c - a*d)*
i^2)/(9*b^3*g^4*(a + b*x)^2) - (2*B^2*d^2*i^2)/(9*b^3*g^4*(a + b*x)) - (2*B
^2*d^3*i^2*Log[a + b*x])/(9*b^3*(b*c - a*d)*g^4) + (B^2*d^3*i^2*Log[a + b*x
]^2)/(3*b^3*(b*c - a*d)*g^4) - (2*B*(b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*
x))/(c + d*x)]))/(9*b^3*g^4*(a + b*x)^3) - (2*B*d*(b*c - a*d)*i^2*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]))/(3*b^3*g^4*(a + b*x)^2) - (2*B*d^2*i^2*(A + B*
Log[(e*(a + b*x))/(c + d*x)]))/(3*b^3*g^4*(a + b*x)) - (2*B*d^3*i^2*Log[a +
 b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^3*(b*c - a*d)*g^4) - ((b*c
 - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(3*b^3*g^4*(a + b*x)^
3) - (d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^3*g^4*(a
 + b*x)^2) - (d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^3*g^4*(a +
 b*x)) + (2*B^2*d^3*i^2*Log[c + d*x])/(9*b^3*(b*c - a*d)*g^4) - (2*B^2*d^3*
i^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*b^3*(b*c - a*d)*g^4)
 + (2*B*d^3*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(3*b^3*(
b*c - a*d)*g^4) + (B^2*d^3*i^2*Log[c + d*x]^2)/(3*b^3*(b*c - a*d)*g^4) - (2
*B^2*d^3*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(3*b^3*(b*c - a*d
)*g^4) - (2*B^2*d^3*i^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(3*b^3*(b
*c - a*d)*g^4) - (2*B^2*d^3*i^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(3*b
^3*(b*c - a*d)*g^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
```

```
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(71c+71dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^4}\,dx = \int \left(\frac{5041(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^4(a+bx)^4} + \frac{10082d(bc-ad)\left(A\right.}{b^2g^4(a\right.}$$

$$= \frac{\left(5041d^2\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^2}dx}{b^2g^4} + \frac{(10082d(bc-ad))\int \frac{\left(A+B\log\left(\frac{e(\right.}{}\right.}{(a+bx}}{b^2g^4}$$

$$= -\frac{5041(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^3g^4(a+bx)^3} - \frac{5041d(bc-ad)\left(A+B\right.}{b^3g^4(a+b}$$

$$= -\frac{5041(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^3g^4(a+bx)^3} - \frac{5041d(bc-ad)\left(A+B\right.}{b^3g^4(a+b}$$

$$= -\frac{5041(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^3g^4(a+bx)^3} - \frac{5041d(bc-ad)\left(A+B\right.}{b^3g^4(a+b}$$

$$= -\frac{5041(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{3b^3g^4(a+bx)^3} - \frac{5041d(bc-ad)\left(A+B\right.}{b^3g^4(a+b}$$

$$= -\frac{10082B(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9b^3g^4(a+bx)^3} - \frac{10082Bd(bc-ad)\left(A\right.}{3b^3g^4(a}$$

$$= -\frac{10082B(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9b^3g^4(a+bx)^3} - \frac{10082Bd(bc-ad)\left(A\right.}{3b^3g^4(a}$$

$$= -\frac{10082B(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9b^3g^4(a+bx)^3} - \frac{10082Bd(bc-ad)\left(A\right.}{3b^3g^4(a}$$

$$= -\frac{10082B^2(bc-ad)^2}{27b^3g^4(a+bx)^3} - \frac{10082B^2d(bc-ad)}{9b^3g^4(a+bx)^2} - \frac{10082B^2d^2}{9b^3g^4(a+bx)} - 10$$

$$= -\frac{10082B^2(bc-ad)^2}{27b^3g^4(a+bx)^3} - \frac{10082B^2d(bc-ad)}{9b^3g^4(a+bx)^2} - \frac{10082B^2d^2}{9b^3g^4(a+bx)} - 10$$

$$= -\frac{10082B^2(bc-ad)^2}{27b^3g^4(a+bx)^3} - \frac{10082B^2d(bc-ad)}{9b^3g^4(a+bx)^2} - \frac{10082B^2d^2}{9b^3g^4(a+bx)} - 10$$

$$= -\frac{10082B^2(bc-ad)^2}{27b^3g^4(a+bx)^3} - \frac{10082B^2d(bc-ad)}{9b^3g^4(a+bx)^2} - \frac{10082B^2d^2}{9b^3g^4(a+bx)} - 10$$

Mathematica [C] time = 2.25, size = 1355, normalized size = 9.22

$$-\frac{i^2\left(18\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2(bc-ad)^3+54d(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2(bc-ad)^2-54d^2(ad-bc)(a+b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x)^4,x]
```

```
[Out] -1/54*(i^2*(18*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 54*d*
(b*c - a*d)^2*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 54*d^2*(-(
b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 54*B*d^2*(
a + b*x)^2*(2*(b*c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*d*(a + b
*x)*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2*d*(a + b*x)*(A +
B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 2*B*(b*c - a*d + d*(a + b*x)
*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - B*d*(a + b*x)*(Log[a + b*x]*(Lo
g[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))
/(-(b*c) + a*d)]) + B*d*(a + b*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - L
og[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 27*
B*d*(a + b*x)*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d*(
-(b*c) + a*d)*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4*d^2*(a + b
*x)^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d^2*(a + b*x)^2
*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 4*B*d*(a + b*x)*(b*c -
 a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + B*((b*c - a*d
)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2
*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x
] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c)
+ a*d)]) - 2*B*d^2*(a + b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[
c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + B*(12*
(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 18*d*(b*c - a*d)^2*(a
+ b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^2*(b*c - a*d)*(a + b*x)^
2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^3*(a + b*x)^3*Log[a + b*x]*(A
 + B*Log[(e*(a + b*x))/(c + d*x)]) - 36*d^3*(a + b*x)^3*(A + B*Log[(e*(a +
b*x))/(c + d*x)])*Log[c + d*x] + 36*B*d^2*(a + b*x)^2*(b*c - a*d + d*(a + b
*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - 9*B*d*(a + b*x)*((b*c - a*d)
^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*
(a + b*x)^2*Log[c + d*x]) + 2*B*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b
*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^
3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3*(a + b*x)^3*(Log[a + b*x]*(Log[a + b
*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c
) + a*d)]) + 18*B*d^3*(a + b*x)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - L
og[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))))/(b^
3*(b*c - a*d)*g^4*(a + b*x)^3)
```

fricas [B] time = 0.85, size = 444, normalized size = 3.02

$$-\frac{3\left(\left(9A^2+6AB+2B^2\right)b^3cd^2-\left(9A^2+6AB+2B^2\right)ab^2d^3\right)i^2x^2+3\left(\left(9A^2+6AB+2B^2\right)b^3c^2d-\left(9A^2+6A\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4,x, alg
orithm="fricas")
```

```
[Out] -1/27*(3*((9*A^2 + 6*A*B + 2*B^2)*b^3*c*d^2 - (9*A^2 + 6*A*B + 2*B^2)*a*b^2
*d^3)*i^2*x^2 + 3*((9*A^2 + 6*A*B + 2*B^2)*b^3*c^2*d - (9*A^2 + 6*A*B + 2*B
^2)*a^2*b*d^3)*i^2*x + ((9*A^2 + 6*A*B + 2*B^2)*b^3*c^3 - (9*A^2 + 6*A*B +
2*B^2)*a^3*d^3)*i^2 + 9*(B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*
B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 6*(
(3*A*B + B^2)*b^3*d^3*i^2*x^3 + 3*(3*A*B + B^2)*b^3*c*d^2*i^2*x^2 + 3*(3*A*
B + B^2)*b^3*c^2*d*i^2*x + (3*A*B + B^2)*b^3*c^3*i^2)*log((b*e*x + a*e)/(d*
x + c)))/((b^7*c - a*b^6*d)*g^4*x^3 + 3*(a*b^6*c - a^2*b^5*d)*g^4*x^2 + 3*(
a^2*b^5*c - a^3*b^4*d)*g^4*x + (a^3*b^4*c - a^4*b^3*d)*g^4)
```

giac [**A**] time = 2.20, size = 180, normalized size = 1.22

$$\frac{\left(9\,B^2e^4\log\left(\frac{bxe+ae}{dx+c}\right)^2+18\,ABe^4\log\left(\frac{bxe+ae}{dx+c}\right)+6\,B^2e^4\log\left(\frac{bxe+ae}{dx+c}\right)+9\,A^2e^4+6\,ABe^4+2\,B^2e^4\right)(dx+c)^3\left(\frac{\quad}{(bce-ad}\right.}{27\,(bxe+ae)^3g^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4,x, alg
orithm="giac")
```

```
[Out] 1/27*(9*B^2*e^4*log((b*x*e + a*e)/(d*x + c))^2 + 18*A*B*e^4*log((b*x*e + a*
e)/(d*x + c)) + 6*B^2*e^4*log((b*x*e + a*e)/(d*x + c)) + 9*A^2*e^4 + 6*A*B*
e^4 + 2*B^2*e^4)*(d*x + c)^3*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c
*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^3*g^4)
```

maple [**B**] time = 0.05, size = 890, normalized size = 6.05

$$\frac{B^2ad\,e^3i^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{3\,(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^3g^4}-\frac{B^2bc\,e^3i^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{3\,(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^3g^4}+\frac{2ABad\,e^3i^2\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{3\,(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^4,x)
```

```
[Out] 1/3*d*e^3*i^2/(a*d-b*c)^2/g^4*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3
*a-1/3*e^3*i^2/(a*d-b*c)^2/g^4*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
3*b*c+2/3*d*e^3*i^2/(a*d-b*c)^2/g^4*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-2/3*e^3*i^2/(a*d-b*c)^2/g^4*A*B/(1
/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c
+2/9*d*e^3*i^2/(a*d-b*c)^2/g^4*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
3*a-2/9*e^3*i^2/(a*d-b*c)^2/g^4*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^3*b*c+1/3*d*e^3*i^2/(a*d-b*c)^2/g^4*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b
/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/3*e^3*i^2/(a*d-b*c)^2/g^4*B^2
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^
2*b*c+2/9*d*e^3*i^2/(a*d-b*c)^2/g^4*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-2/9*e^3*i^2/(a*d-b*c)^2/g^4*B^2/(1
/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c
+2/27*d*e^3*i^2/(a*d-b*c)^2/g^4*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^3*a-2/27*e^3*i^2/(a*d-b*c)^2/g^4*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)^3*b*c
```

maxima [**B**] time = 5.28, size = 5532, normalized size = 37.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4,x, alg
orithm="maxima")
```

```
[Out] -1/3*(3*b*x + a)*B^2*c*d*i^2*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^5*g^
4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*(3*b^2*x^2 +
 3*a*b*x + a^2)*B^2*d^2*i^2*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^6*g^4
*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 1/54*(6*((6*b^2*d
^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((
b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d
 + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4
*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*log(b*x + a)/((
```

```
b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x
 + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4))*log(b*
e*x/(d*x + c) + a*e/(d*x + c)) + (4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*
d^2 - 85*a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b
^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*
a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d -
54*a*b^2*c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^
2*b*d^3*x + a^3*d^3)*log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 +
33*a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^
3*x + a^3*d^3)*log(b*x + a))*log(d*x + c))/(a^3*b^4*c^3*g^4 - 3*a^4*b^3*c^2
*d*g^4 + 3*a^5*b^2*c*d^2*g^4 - a^6*b*d^3*g^4 + (b^7*c^3*g^4 - 3*a*b^6*c^2*d
*g^4 + 3*a^2*b^5*c*d^2*g^4 - a^3*b^4*d^3*g^4)*x^3 + 3*(a*b^6*c^3*g^4 - 3*a^
2*b^5*c^2*d*g^4 + 3*a^3*b^4*c*d^2*g^4 - a^4*b^3*d^3*g^4)*x^2 + 3*(a^2*b^5*c
^3*g^4 - 3*a^3*b^4*c^2*d*g^4 + 3*a^4*b^3*c*d^2*g^4 - a^5*b^2*d^3*g^4)*x))*B
^2*c^2*i^2 - 1/54*(6*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*
d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^
2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3
*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (
a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*log
(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) +
 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c
*d^2 - a^3*b^2*d^3)*g^4))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (19*a*b^3*
c^3 - 189*a^2*b^2*c^2*d + 189*a^3*b*c*d^2 - 19*a^4*d^3 - 6*(27*b^4*c^2*d -
32*a*b^3*c*d^2 + 5*a^2*b^2*d^3)*x^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*
c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2
*c*d^2 - a^3*b*d^3)*x)*log(b*x + a)^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^
4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b
^2*c*d^2 - a^3*b*d^3)*x)*log(d*x + c)^2 + 3*(9*b^4*c^3 - 125*a*b^3*c^2*d +
135*a^2*b^2*c*d^2 - 19*a^3*b*d^3)*x - 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + (27*b
^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + 3*(2
7*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x)*log(b*x + a) + 6*(27*a^3*b*c*d^2 - 5*a^4*
d^3 + (27*b^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)
*x^2 + 3*(27*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x - 6*(3*a^3*b*c*d^2 - a^4*d^3 +
(3*b^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*
a^2*b^2*c*d^2 - a^3*b*d^3)*x)*log(b*x + a))*log(d*x + c))/(a^3*b^5*c^3*g^4
- 3*a^4*b^4*c^2*d*g^4 + 3*a^5*b^3*c*d^2*g^4 - a^6*b^2*d^3*g^4 + (b^8*c^3*g^
4 - 3*a*b^7*c^2*d*g^4 + 3*a^2*b^6*c*d^2*g^4 - a^3*b^5*d^3*g^4)*x^3 + 3*(a*b
^7*c^3*g^4 - 3*a^2*b^6*c^2*d*g^4 + 3*a^3*b^5*c*d^2*g^4 - a^4*b^4*d^3*g^4)*x
^2 + 3*(a^2*b^6*c^3*g^4 - 3*a^3*b^5*c^2*d*g^4 + 3*a^4*b^4*c*d^2*g^4 - a^5*b
^3*d^3*g^4)*x))*B^2*c*d*i^2 - 1/54*(6*((11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^
4*d^2 + 6*(3*b^4*c^2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*
a^2*b^2*c*d + 2*a^3*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^
3 + 3*(a*b^7*c^2 - 2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 -
2*a^3*b^5*c*d + a^4*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3
*d^2)*g^4) + 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(b*x + a)/((b^6*c^3
 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3
*a*b*c*d^2 + a^2*d^3)*log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*
d^2 - a^3*b^3*d^3)*g^4))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (85*a^2*b^3
*c^3 - 108*a^3*b^2*c^2*d + 27*a^4*b*c*d^2 - 4*a^5*d^3 + 6*(18*b^5*c^3 - 27*
a*b^4*c^2*d + 11*a^2*b^3*c*d^2 - 2*a^3*b^2*d^3)*x^2 - 18*(3*a^3*b^2*c^2*d -
 3*a^4*b*c*d^2 + a^5*d^3 + (3*b^5*c^2*d - 3*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3
+ 3*(3*a*b^4*c^2*d - 3*a^2*b^3*c*d^2 + a^3*b^2*d^3)*x^2 + 3*(3*a^2*b^3*c^2*
d - 3*a^3*b^2*c*d^2 + a^4*b*d^3)*x)*log(b*x + a)^2 - 18*(3*a^3*b^2*c^2*d -
3*a^4*b*c*d^2 + a^5*d^3 + (3*b^5*c^2*d - 3*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 +
 3*(3*a*b^4*c^2*d - 3*a^2*b^3*c*d^2 + a^3*b^2*d^3)*x^2 + 3*(3*a^2*b^3*c^2*d
 - 3*a^3*b^2*c*d^2 + a^4*b*d^3)*x)*log(d*x + c)^2 + 3*(63*a*b^4*c^3 - 86*a^
2*b^3*c^2*d + 27*a^3*b^2*c*d^2 - 4*a^4*b*d^3)*x + 6*(18*a^3*b^2*c^2*d - 9*a
^4*b*c*d^2 + 2*a^5*d^3 + (18*b^5*c^2*d - 9*a*b^4*c*d^2 + 2*a^2*b^3*d^3)*x^3
 + 3*(18*a*b^4*c^2*d - 9*a^2*b^3*c*d^2 + 2*a^3*b^2*d^3)*x^2 + 3*(18*a^2*b^3
```

```
*c^2*d - 9*a^3*b^2*c*d^2 + 2*a^4*b*d^3)*x)*log(b*x + a) - 6*(18*a^3*b^2*c^2
*d - 9*a^4*b*c*d^2 + 2*a^5*d^3 + (18*b^5*c^2*d - 9*a*b^4*c*d^2 + 2*a^2*b^3*
d^3)*x^3 + 3*(18*a*b^4*c^2*d - 9*a^2*b^3*c*d^2 + 2*a^3*b^2*d^3)*x^2 + 3*(18
*a^2*b^3*c^2*d - 9*a^3*b^2*c*d^2 + 2*a^4*b*d^3)*x - 6*(3*a^3*b^2*c^2*d - 3*
a^4*b*c*d^2 + a^5*d^3 + (3*b^5*c^2*d - 3*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 3
*(3*a*b^4*c^2*d - 3*a^2*b^3*c*d^2 + a^3*b^2*d^3)*x^2 + 3*(3*a^2*b^3*c^2*d -
 3*a^3*b^2*c*d^2 + a^4*b*d^3)*x)*log(b*x + a))*log(d*x + c))/(a^3*b^6*c^3*g
^4 - 3*a^4*b^5*c^2*d*g^4 + 3*a^5*b^4*c*d^2*g^4 - a^6*b^3*d^3*g^4 + (b^9*c^3
*g^4 - 3*a*b^8*c^2*d*g^4 + 3*a^2*b^7*c*d^2*g^4 - a^3*b^6*d^3*g^4)*x^3 + 3*(
a*b^8*c^3*g^4 - 3*a^2*b^7*c^2*d*g^4 + 3*a^3*b^6*c*d^2*g^4 - a^4*b^5*d^3*g^4
)*x^2 + 3*(a^2*b^7*c^3*g^4 - 3*a^3*b^6*c^2*d*g^4 + 3*a^4*b^5*c*d^2*g^4 - a^
5*b^4*d^3*g^4)*x))*B^2*d^2*i^2 - 1/9*A*B*d^2*i^2*(6*(3*b^2*x^2 + 3*a*b*x +
a^2)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 +
3*a^2*b^4*g^4*x + a^3*b^3*g^4) + (11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2
+ 6*(3*b^4*c^2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^
2*c*d + 2*a^3*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*
(a*b^7*c^2 - 2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*
b^5*c*d + a^4*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*
g^4) + 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(b*x + a)/((b^6*c^3 - 3*a
*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c
*d^2 + a^2*d^3)*log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 -
a^3*b^3*d^3)*g^4)) - 1/9*A*B*c*d*i^2*(6*(3*b*x + a)*log(b*e*x/(d*x + c) + a
*e/(d*x + c))/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^
4) + (5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^
2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d +
 a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2
 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a
^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c
^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a
*d^3)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^
3)*g^4)) - 1/9*A*B*c^2*i^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2
*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^
4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^
2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5
*b*d^2)*g^4) + 6*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4*g^4*x^3 + 3*a*b^
3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3
*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4
*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4)) - 1/3*B^2*c^2*i^2
*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*
a^2*b^2*g^4*x + a^3*b*g^4) - 1/3*(3*b*x + a)*A^2*c*d*i^2/(b^5*g^4*x^3 + 3*a
*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*(3*b^2*x^2 + 3*a*b*x +
a^2)*A^2*d^2*i^2/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3
*g^4) - 1/3*A^2*c^2*i^2/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x +
a^3*b*g^4)
```

mupad [B] time = 7.41, size = 1153, normalized size = 7.84

$$-\frac{x^2 \left(9\,A^2\,b^2\,d^2\,i^2+6\,A\,B\,b^2\,d^2\,i^2+2\,B^2\,b^2\,d^2\,i^2\right)+x\,\left(9\,c\,A^2\,b^2\,d\,i^2+9\,a\,A^2\,b\,d^2\,i^2+6\,c\,A\,B\,b^2\,d\,i^2+6\,a\,A\,B\,b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
4,x)
```

```
[Out] - (x^2*(9*A^2*b^2*d^2*i^2 + 2*B^2*b^2*d^2*i^2 + 6*A*B*b^2*d^2*i^2) + x*(9*A
^2*a*b*d^2*i^2 + 2*B^2*a*b*d^2*i^2 + 9*A^2*b^2*c*d*i^2 + 2*B^2*b^2*c*d*i^2
```

```
+ 6*A*B*a*b*d^2*i^2 + 6*A*B*b^2*c*d*i^2) + 3*A^2*a^2*d^2*i^2 + 3*A^2*b^2*c^
2*i^2 + (2*B^2*a^2*d^2*i^2)/3 + (2*B^2*b^2*c^2*i^2)/3 + 2*A*B*a^2*d^2*i^2 +
 2*A*B*b^2*c^2*i^2 + 3*A^2*a*b*c*d*i^2 + (2*B^2*a*b*c*d*i^2)/3 + 2*A*B*a*b*
c*d*i^2)/(9*a^3*b^3*g^4 + 9*b^6*g^4*x^3 + 27*a^2*b^4*g^4*x + 27*a*b^5*g^4*x
^2) - log((e*(a + b*x))/(c + d*x))^2*((x*(b*((B^2*c*d*i^2)/(3*b^3*g^4) + (B
^2*a*d^2*i^2)/(3*b^4*g^4)) + (2*B^2*c*d*i^2)/(3*b^2*g^4) + (2*B^2*a*d^2*i^2
)/(3*b^3*g^4)) + a*((B^2*c*d*i^2)/(3*b^3*g^4) + (B^2*a*d^2*i^2)/(3*b^4*g^4)
) + (B^2*c^2*i^2)/(3*b^2*g^4) + (B^2*d^2*i^2*x^2)/(b^2*g^4))/(3*a^2*x + a^3
/b + b^2*x^3 + 3*a*b*x^2) - (B^2*d^3*i^2)/(3*b^3*g^4*(a*d - b*c))) - (log((
e*(a + b*x))/(c + d*x))*(x*(b*((B*i^2*(2*A*b*c - B*a*d + B*b*c))/(3*b^4*g^4
) + (2*A*B*a*d*i^2)/(3*b^4*g^4)) + (2*B*i^2*(2*A*b*c - B*a*d + B*b*c))/(3*b
^3*g^4) + (2*B^2*d^3*i^2*(b*((3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)/(6*b*d^3) +
(a*(a*d - b*c))/(3*b*d^2)) + (3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)/(3*d^3) + (2
*a*(a*d - b*c))/(3*d^2)))/(3*b^3*g^4*(a*d - b*c)) + (4*A*B*a*d*i^2)/(3*b^3*
g^4)) + x^2*((2*A*B*d*i^2)/(b^2*g^4) - (2*B^2*d^3*i^2*((b^2*c - a*b*d)/(3*d
^2) - (2*b*(a*d - b*c))/(3*d^2)))/(3*b^3*g^4*(a*d - b*c))) + a*((B*i^2*(2*A
*b*c - B*a*d + B*b*c))/(3*b^4*g^4) + (2*A*B*a*d*i^2)/(3*b^4*g^4)) + (2*B*i^
2*(A*b^2*c^2 - B*a^2*d^2 + B*a*b*c*d))/(3*b^4*d*g^4) + (2*B^2*d^3*i^2*(a*((
3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)/(6*b*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (
3*a^3*d^3 - b^3*c^3 + 4*a*b^2*c^2*d - 6*a^2*b*c*d^2)/(3*b*d^4)))/(3*b^3*g^4
*(a*d - b*c))))/((3*a^2*x)/d + a^3/(b*d) + (b^2*x^3)/d + (3*a*b*x^2)/d) - (
B*d^3*i^2*atan((((9*b^4*c*g^4 + 9*a*b^3*d*g^4)/(9*b^3*g^4) + 2*b*d*x)*1i)/(
a*d - b*c))*(3*A + B)*4i)/(9*b^3*g^4*(a*d - b*c))
```

sympy [B] time = 69.83, size = 1182, normalized size = 8.04

$$-\frac{2Bd^3i^2(3A+B)\log\left(x+\frac{6ABad^4i^2+6ABbcd^3i^2+2B^2ad^4i^2+2B^2bcd^3i^2-\frac{2Ba^2d^5i^2(3A+B)}{ad-bc}+\frac{4Babcd^4i^2(3A+B)}{ad-bc}-\frac{2Bb^2c^2d^3i^2(3A+B)}{ad-bc}}{12ABbd^4i^2+4B^2bd^4i^2}\right)}{9b^3g^4(ad-bc)}+2Bd^3i^2(3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**4,x)
```

```
[Out] -2*B*d**3*i**2*(3*A + B)*log(x + (6*A*B*a*d**4*i**2 + 6*A*B*b*c*d**3*i**2 +
 2*B**2*a*d**4*i**2 + 2*B**2*b*c*d**3*i**2 - 2*B*a**2*d**5*i**2*(3*A + B)/(
a*d - b*c) + 4*B*a*b*c*d**4*i**2*(3*A + B)/(a*d - b*c) - 2*B*b**2*c**2*d**3
*i**2*(3*A + B)/(a*d - b*c))/(12*A*B*b*d**4*i**2 + 4*B**2*b*d**4*i**2))/(9*
b**3*g**4*(a*d - b*c)) + 2*B*d**3*i**2*(3*A + B)*log(x + (6*A*B*a*d**4*i**2
 + 6*A*B*b*c*d**3*i**2 + 2*B**2*a*d**4*i**2 + 2*B**2*b*c*d**3*i**2 + 2*B*a*
*2*d**5*i**2*(3*A + B)/(a*d - b*c) - 4*B*a*b*c*d**4*i**2*(3*A + B)/(a*d - b
*c) + 2*B*b**2*c**2*d**3*i**2*(3*A + B)/(a*d - b*c))/(12*A*B*b*d**4*i**2 +
4*B**2*b*d**4*i**2))/(9*b**3*g**4*(a*d - b*c)) + (B**2*c**3*i**2 + 3*B**2*c
**2*d*i**2*x + 3*B**2*c*d**2*i**2*x**2 + B**2*d**3*i**2*x**3)*log(e*(a + b*
x)/(c + d*x))**2/(3*a**4*d*g**4 - 3*a**3*b*c*g**4 + 9*a**3*b*d*g**4*x - 9*a
**2*b**2*c*g**4*x + 9*a**2*b**2*d*g**4*x**2 - 9*a*b**3*c*g**4*x**2 + 3*a*b*
*3*d*g**4*x**3 - 3*b**4*c*g**4*x**3) + (-9*A**2*a**2*d**2*i**2 - 9*A**2*a*b
*c*d*i**2 - 9*A**2*b**2*c**2*i**2 - 6*A*B*a**2*d**2*i**2 - 6*A*B*a*b*c*d*i*
*2 - 6*A*B*b**2*c**2*i**2 - 2*B**2*a**2*d**2*i**2 - 2*B**2*a*b*c*d*i**2 - 2
*B**2*b**2*c**2*i**2 + x**2*(-27*A**2*b**2*d**2*i**2 - 18*A*B*b**2*d**2*i**
2 - 6*B**2*b**2*d**2*i**2) + x*(-27*A**2*a*b*d**2*i**2 - 27*A**2*b**2*c*d*i
**2 - 18*A*B*a*b*d**2*i**2 - 18*A*B*b**2*c*d*i**2 - 6*B**2*a*b*d**2*i**2 -
6*B**2*b**2*c*d*i**2))/(27*a**3*b**3*g**4 + 81*a**2*b**4*g**4*x + 81*a*b**5
*g**4*x**2 + 27*b**6*g**4*x**3) + (-6*A*B*a**2*d**2*i**2 - 6*A*B*a*b*c*d*i*
*2 - 18*A*B*a*b*d**2*i**2*x - 6*A*B*b**2*c**2*i**2 - 18*A*B*b**2*c*d*i**2*x
 - 18*A*B*b**2*d**2*i**2*x**2 - 2*B**2*a**2*d**2*i**2 - 2*B**2*a*b*c*d*i**2
 - 6*B**2*a*b*d**2*i**2*x - 2*B**2*b**2*c**2*i**2 - 6*B**2*b**2*c*d*i**2*x
- 6*B**2*b**2*d**2*i**2*x**2)*log(e*(a + b*x)/(c + d*x))/(9*a**3*b**3*g**4
+ 27*a**2*b**4*g**4*x + 27*a*b**5*g**4*x**2 + 9*b**6*g**4*x**3)
```

3.72 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^5}\,dx$

Optimal. Leaf size=299

$$-\frac{bi^2(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{4g^5(a+bx)^4(bc-ad)^2}-\frac{bBi^2(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{8g^5(a+bx)^4(bc-ad)^2}+\frac{di^2(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{3g^5(a+bx)^3(bc-ad)^2}$$

```
[Out] 2/27*B^2*d*i^2*(d*x+c)^3/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/32*b*B^2*i^2*(d*x+c)^
4/(-a*d+b*c)^2/g^5/(b*x+a)^4+2/9*B*d*i^2*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c
)))/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/8*b*B*i^2*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x
+c)))/(-a*d+b*c)^2/g^5/(b*x+a)^4+1/3*d*i^2*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x
+c)))^2/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/4*b*i^2*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d
*x+c)))^2/(-a*d+b*c)^2/g^5/(b*x+a)^4
```

Rubi [C] time = 3.69, antiderivative size = 920, normalized size of antiderivative = 3.08, number of steps used = 104, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.262, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{B^2i^2\log^2(a+bx)d^4}{12b^3(bc-ad)^2g^5}-\frac{B^2i^2\log^2(c+dx)d^4}{12b^3(bc-ad)^2g^5}+\frac{7B^2i^2\log(a+bx)d^4}{72b^3(bc-ad)^2g^5}+\frac{Bi^2\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)d^4}{6b^3(bc-ad)^2g^5}-\frac{7B}{7}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^
5,x]
```

```
[Out] -(B^2*(b*c - a*d)^2*i^2)/(32*b^3*g^5*(a + b*x)^4) - (11*B^2*d*(b*c - a*d)*i
^2)/(216*b^3*g^5*(a + b*x)^3) + (5*B^2*d^2*i^2)/(144*b^3*g^5*(a + b*x)^2) +
 (7*B^2*d^3*i^2)/(72*b^3*(b*c - a*d)*g^5*(a + b*x)) + (7*B^2*d^4*i^2*Log[a
+ b*x])/(72*b^3*(b*c - a*d)^2*g^5) - (B^2*d^4*i^2*Log[a + b*x]^2)/(12*b^3*(
b*c - a*d)^2*g^5) - (B*(b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)
]))/(8*b^3*g^5*(a + b*x)^4) - (5*B*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(18*b^3*g^5*(a + b*x)^3) - (B*d^2*i^2*(A + B*Log[(e*(a + b*
x))/(c + d*x)]))/(12*b^3*g^5*(a + b*x)^2) + (B*d^3*i^2*(A + B*Log[(e*(a + b
*x))/(c + d*x)]))/(6*b^3*(b*c - a*d)*g^5*(a + b*x)) + (B*d^4*i^2*Log[a + b*
x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(6*b^3*(b*c - a*d)^2*g^5) - ((b*c
- a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(4*b^3*g^5*(a + b*x)^4
) - (2*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(3*b^3*g^5
*(a + b*x)^3) - (d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*b^3*g^5
*(a + b*x)^2) - (7*B^2*d^4*i^2*Log[c + d*x])/(72*b^3*(b*c - a*d)^2*g^5) + (
B^2*d^4*i^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(6*b^3*(b*c - a
*d)^2*g^5) - (B*d^4*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/
(6*b^3*(b*c - a*d)^2*g^5) - (B^2*d^4*i^2*Log[c + d*x]^2)/(12*b^3*(b*c - a*d
)^2*g^5) + (B^2*d^4*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(6*b^3
*(b*c - a*d)^2*g^5) + (B^2*d^4*i^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]
)/(6*b^3*(b*c - a*d)^2*g^5) + (B^2*d^4*i^2*PolyLog[2, (b*(c + d*x))/(b*c -
a*d)])/(6*b^3*(b*c - a*d)^2*g^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(72c+72dx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^5}\,dx = \int\left(\frac{5184(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^5(a+bx)^5}+\frac{10368d(bc-ad)\left(A\right.}{b^2g^5(a}\right.$$

$$=\frac{\left(5184d^2\right)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^3}\,dx}{b^2g^5}+\frac{(10368d(bc-ad))\int\frac{\left(A+B\log\left(\frac{e}{}\right.\right.}{(a+bx}}{b^2g^5}$$

$$=-\frac{1296(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^5(a+bx)^4}-\frac{3456d(bc-ad)\left(A+B\right.}{b^3g^5(a+b}$$

$$=-\frac{1296(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^5(a+bx)^4}-\frac{3456d(bc-ad)\left(A+B\right.}{b^3g^5(a+b}$$

$$=-\frac{1296(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^5(a+bx)^4}-\frac{3456d(bc-ad)\left(A+B\right.}{b^3g^5(a+b}$$

$$=-\frac{1296(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^5(a+bx)^4}-\frac{3456d(bc-ad)\left(A+B\right.}{b^3g^5(a+b}$$

$$=-\frac{648B(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^5(a+bx)^4}-\frac{1440Bd(bc-ad)\left(A+\right.}{b^3g^5(a+b}$$

$$=-\frac{648B(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^5(a+bx)^4}-\frac{1440Bd(bc-ad)\left(A+\right.}{b^3g^5(a+b}$$

$$=-\frac{648B(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^3g^5(a+bx)^4}-\frac{1440Bd(bc-ad)\left(A+\right.}{b^3g^5(a+b}$$

$$=-\frac{162B^2(bc-ad)^2}{b^3g^5(a+bx)^4}-\frac{264B^2d(bc-ad)}{b^3g^5(a+bx)^3}+\frac{180B^2d^2}{b^3g^5(a+bx)^2}+\frac{5}{b^3(bc-}$$

$$=-\frac{162B^2(bc-ad)^2}{b^3g^5(a+bx)^4}-\frac{264B^2d(bc-ad)}{b^3g^5(a+bx)^3}+\frac{180B^2d^2}{b^3g^5(a+bx)^2}+\frac{5}{b^3(bc-}$$

$$=-\frac{162B^2(bc-ad)^2}{b^3g^5(a+bx)^4}-\frac{264B^2d(bc-ad)}{b^3g^5(a+bx)^3}+\frac{180B^2d^2}{b^3g^5(a+bx)^2}+\frac{5}{b^3(bc-}$$

$$=-\frac{162B^2(bc-ad)^2}{b^3g^5(a+bx)^4}-\frac{264B^2d(bc-ad)}{b^3g^5(a+bx)^3}+\frac{180B^2d^2}{b^3g^5(a+bx)^2}+\frac{5}{b^3(bc-}$$

Mathematica [C] time = 3.10, size = 1788, normalized size = 5.98

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x)^5,x]
```

```
[Out] -1/864*(i^2*(216*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 576
*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 432*
d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 216*
B*d^2*(a + b*x)^2*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4
*d*(-(b*c) + a*d)*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4*d^2*(a
 + b*x)^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*d^2*(a + b*
x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 4*B*d*(a + b*x)*(b
*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + B*((b*c -
 a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2
*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a +
 b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b
*c) + a*d)]) - 2*B*d^2*(a + b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] -
Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 32
*B*d*(a + b*x)*(12*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 18*
d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^2*(b*
c - a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*d^3*(a + b*x
)^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 36*d^3*(a + b*x)^3*
(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 36*B*d^2*(a + b*x)^2*(b
*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - 9*B*d*(a
+ b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Lo
g[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*(2*(b*c - a*d)^3 - 3*d*(
b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*
Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3*(a + b*x)^3*(Log[
a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (
d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*(a + b*x)^3*((2*Log[(d*(a + b*x))/
(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(
b*c - a*d)])) + 3*B*(36*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])
+ 48*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 72
*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 144*d
^3*(-(b*c) + a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 144*d^
4*(a + b*x)^4*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 144*d^4*(
a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 144*B*d^3*(a
 + b*x)^3*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x])
 + 36*B*d^2*(a + b*x)^2*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d
^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) - 8*B*d*(a +
b*x)*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a
+ b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x])
 + 3*B*(3*(b*c - a*d)^4 + 4*d*(-(b*c) + a*d)^3*(a + b*x) + 6*d^2*(b*c - a*d
)^2*(a + b*x)^2 + 12*d^3*(-(b*c) + a*d)*(a + b*x)^3 - 12*d^4*(a + b*x)^4*Lo
g[a + b*x] + 12*d^4*(a + b*x)^4*Log[c + d*x]) + 72*B*d^4*(a + b*x)^4*(Log[a
 + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d
*(a + b*x))/(-(b*c) + a*d)]) - 72*B*d^4*(a + b*x)^4*((2*Log[(d*(a + b*x))/(
-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b
*c - a*d)]))))/(b^3*(b*c - a*d)^2*g^5*(a + b*x)^4)
```

fricas [B] time = 0.89, size = 837, normalized size = 2.80

$$12\left(\left(12\,AB+7\,B^{2}\right)b^{4}cd^{3}-\left(12\,AB+7\,B^{2}\right)ab^{3}d^{4}\right)i^{2}x^{3}-6\left(\left(72\,A^{2}+12\,AB-5\,B^{2}\right)b^{4}c^{2}d^{2}-16\left(9\,A^{2}+6\,AB+2\,B\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, alg
orithm="fricas")
```

```
[Out] 1/864*(12*((12*A*B + 7*B^2)*b^4*c*d^3 - (12*A*B + 7*B^2)*a*b^3*d^4)*i^2*x^3
 - 6*((72*A^2 + 12*A*B - 5*B^2)*b^4*c^2*d^2 - 16*(9*A^2 + 6*A*B + 2*B^2)*a*
b^3*c*d^3 + (72*A^2 + 84*A*B + 37*B^2)*a^2*b^2*d^4)*i^2*x^2 - 4*((144*A^2 +
 60*A*B + 11*B^2)*b^4*c^3*d - 24*(9*A^2 + 6*A*B + 2*B^2)*a*b^3*c^2*d^2 + (7
2*A^2 + 84*A*B + 37*B^2)*a^3*b*d^4)*i^2*x - (27*(8*A^2 + 4*A*B + B^2)*b^4*c
^4 - 32*(9*A^2 + 6*A*B + 2*B^2)*a*b^3*c^3*d + (72*A^2 + 84*A*B + 37*B^2)*a^
4*d^4)*i^2 + 72*(B^2*b^4*d^4*i^2*x^4 + 4*B^2*a*b^3*d^4*i^2*x^3 - 6*(B^2*b^4
*c^2*d^2 - 2*B^2*a*b^3*c*d^3)*i^2*x^2 - 4*(2*B^2*b^4*c^3*d - 3*B^2*a*b^3*c^
2*d^2)*i^2*x - (3*B^2*b^4*c^4 - 4*B^2*a*b^3*c^3*d)*i^2)*log((b*e*x + a*e)/(
d*x + c))^2 + 12*((12*A*B + 7*B^2)*b^4*d^4*i^2*x^4 + 4*(3*B^2*b^4*c*d^3 + 4
*(3*A*B + B^2)*a*b^3*d^4)*i^2*x^3 - 6*((12*A*B + B^2)*b^4*c^2*d^2 - 8*(3*A*
B + B^2)*a*b^3*c*d^3)*i^2*x^2 - 4*((24*A*B + 5*B^2)*b^4*c^3*d - 12*(3*A*B +
 B^2)*a*b^3*c^2*d^2)*i^2*x - (9*(4*A*B + B^2)*b^4*c^4 - 16*(3*A*B + B^2)*a*
b^3*c^3*d)*i^2)*log((b*e*x + a*e)/(d*x + c)))/((b^9*c^2 - 2*a*b^8*c*d + a^2
*b^7*d^2)*g^5*x^4 + 4*(a*b^8*c^2 - 2*a^2*b^7*c*d + a^3*b^6*d^2)*g^5*x^3 + 6
*(a^2*b^7*c^2 - 2*a^3*b^6*c*d + a^4*b^5*d^2)*g^5*x^2 + 4*(a^3*b^6*c^2 - 2*a
^4*b^5*c*d + a^5*b^4*d^2)*g^5*x + (a^4*b^5*c^2 - 2*a^5*b^4*c*d + a^6*b^3*d^
2)*g^5)
```

giac [A] time = 2.82, size = 425, normalized size = 1.42

$$\left(216\,B^2be^5\log\left(\frac{bxe+ae}{dx+c}\right)^2-\frac{288\,(bxe+ae)B^2de^4\log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c}+432\,ABbe^5\log\left(\frac{bxe+ae}{dx+c}\right)+108\,B^2be^5\log\left(\frac{bxe+ae}{dx+c}\right)-\frac{576\,(bx}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, alg
orithm="giac")
```

```
[Out] 1/864*(216*B^2*b*e^5*log((b*x*e + a*e)/(d*x + c))^2 - 288*(b*x*e + a*e)*B^2
*d*e^4*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 432*A*B*b*e^5*log((b*x*e
+ a*e)/(d*x + c)) + 108*B^2*b*e^5*log((b*x*e + a*e)/(d*x + c)) - 576*(b*x*e
 + a*e)*A*B*d*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 192*(b*x*e + a*e
)*B^2*d*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 216*A^2*b*e^5 + 108*A*
B*b*e^5 + 27*B^2*b*e^5 - 288*(b*x*e + a*e)*A^2*d*e^4/(d*x + c) - 192*(b*x*e
 + a*e)*A*B*d*e^4/(d*x + c) - 64*(b*x*e + a*e)*B^2*d*e^4/(d*x + c))*(b*c/((
b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e +
a*e)^4*b*c*g^5/(d*x + c)^4 - (b*x*e + a*e)^4*a*d*g^5/(d*x + c)^4)
```

maple [B] time = 0.05, size = 1814, normalized size = 6.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^5,x)
```

```
[Out] 1/3*d^2*e^3*i^2/(a*d-b*c)^3/g^5*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^3*a-1/3*d*e^3*i^2/(a*d-b*c)^3/g^5*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^3*b*c-1/4*d*e^4*i^2/(a*d-b*c)^3/g^5*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)^4*a+1/4*e^4*i^2/(a*d-b*c)^3/g^5*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)
*b*c/d*e+b/d*e)^4*c+2/3*d^2*e^3*i^2/(a*d-b*c)^3/g^5*A*B/(1/(d*x+c)*a*e-1/(d
*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-2/3*d*e^3*i^2/(a*d
-b*c)^3/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)*b*c+2/9*d^2*e^3*i^2/(a*d-b*c)^3/g^5*A*B/(1/(d*x+c)*a*e-1/(d*
```

```
x+c)*b*c/d*e+b/d*e)^3*a-2/9*d*e^3*i^2/(a*d-b*c)^3/g^5*A*B/(1/(d*x+c)*a*e-1/
(d*x+c)*b*c/d*e+b/d*e)^3*b*c-1/2*d*e^4*i^2/(a*d-b*c)^3/g^5*A*B*b/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/2*e^4*i
^2/(a*d-b*c)^3/g^5*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/8*d*e^4*i^2/(a*d-b*c)^3/g^5*A*B*b/(1/(d*x+c)*
a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/8*e^4*i^2/(a*d-b*c)^3/g^5*A*B*b^2/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c+1/3*d^2*e^3*i^2/(a*d-b*c)^3/g^5*B^2/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*
a-1/3*d*e^3*i^2/(a*d-b*c)^3/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c+2/9*d^2*e^3*i^2/(a*d-b*c)^3/g^5*B^
2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
*a-2/9*d*e^3*i^2/(a*d-b*c)^3/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+2/27*d^2*e^3*i^2/(a*d-b*c)^3/g^5*B^
2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-2/27*d*e^3*i^2/(a*d-b*c)^3/g^
5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c-1/4*d*e^4*i^2/(a*d-b*c)
^3/g^5*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)^2*a+1/4*e^4*i^2/(a*d-b*c)^3/g^5*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c
)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-1/8*d*e^4*i^2/(a*d-b
*c)^3/g^5*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)*a+1/8*e^4*i^2/(a*d-b*c)^3/g^5*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+
c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/32*d*e^4*i^2/(a*d-b
*c)^3/g^5*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/32*e^4*i^2/(a
*d-b*c)^3/g^5*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c
```

maxima [B] time = 8.09, size = 8031, normalized size = 26.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, alg
orithm="maxima")
```

```
[Out] -1/6*(4*b*x + a)*B^2*c*d*i^2*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^6*g^
5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5
) - 1/12*(6*b^2*x^2 + 4*a*b*x + a^2)*B^2*d^2*i^2*log(b*e*x/(d*x + c) + a*e/
(d*x + c))^2/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4
*g^5*x + a^4*b^3*g^5) + 1/288*(12*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c
^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b
^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a
^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^
3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a
^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*
a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6
*b^2*c*d^2 - a^7*b*d^3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*
d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x
+ c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*
b*d^4)*g^5))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - (9*b^4*c^4 - 64*a*b^3*c
^3*d + 216*a^2*b^2*c^2*d^2 - 576*a^3*b*c*d^3 + 415*a^4*d^4 - 300*(b^4*c*d^3
 - a*b^3*d^4)*x^3 + 6*(13*b^4*c^2*d^2 - 176*a*b^3*c*d^3 + 163*a^2*b^2*d^4)*
x^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x
 + a^4*d^4)*log(b*x + a)^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*
d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(d*x + c)^2 - 4*(7*b^4*c^3*d - 60*a*b
^3*c^2*d^2 + 324*a^2*b^2*c*d^3 - 271*a^3*b*d^4)*x - 300*(b^4*d^4*x^4 + 4*a*
b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a) + 1
2*(25*b^4*d^4*x^4 + 100*a*b^3*d^4*x^3 + 150*a^2*b^2*d^4*x^2 + 100*a^3*b*d^4
*x + 25*a^4*d^4 - 12*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4
*a^3*b*d^4*x + a^4*d^4)*log(b*x + a))*log(d*x + c))/(a^4*b^5*c^4*g^5 - 4*a^
5*b^4*c^3*d*g^5 + 6*a^6*b^3*c^2*d^2*g^5 - 4*a^7*b^2*c*d^3*g^5 + a^8*b*d^4*g
^5 + (b^9*c^4*g^5 - 4*a*b^8*c^3*d*g^5 + 6*a^2*b^7*c^2*d^2*g^5 - 4*a^3*b^6*c
*d^3*g^5 + a^4*b^5*d^4*g^5)*x^4 + 4*(a*b^8*c^4*g^5 - 4*a^2*b^7*c^3*d*g^5 +
```

```
6*a^3*b^6*c^2*d^2*g^5 - 4*a^4*b^5*c*d^3*g^5 + a^5*b^4*d^4*g^5)*x^3 + 6*(a^2
*b^7*c^4*g^5 - 4*a^3*b^6*c^3*d*g^5 + 6*a^4*b^5*c^2*d^2*g^5 - 4*a^5*b^4*c*d^
3*g^5 + a^6*b^3*d^4*g^5)*x^2 + 4*(a^3*b^6*c^4*g^5 - 4*a^4*b^5*c^3*d*g^5 + 6
*a^5*b^4*c^2*d^2*g^5 - 4*a^6*b^3*c*d^3*g^5 + a^7*b^2*d^4*g^5)*x))*B^2*c^2*i
^2 - 1/432*(12*((7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d
^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7
*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a
^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5
*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*
x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5
*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^
5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5)
 + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4
*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log
(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 +
 a^4*b^2*d^4)*g^5))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (37*a*b^4*c^4 -
304*a^2*b^3*c^3*d + 1512*a^3*b^2*c^2*d^2 - 1360*a^4*b*c*d^3 + 115*a^5*d^4 +
 12*(88*b^5*c^2*d^2 - 101*a*b^4*c*d^3 + 13*a^2*b^3*d^4)*x^3 - 6*(40*b^5*c^3
*d - 609*a*b^4*c^2*d^2 + 648*a^2*b^3*c*d^3 - 79*a^3*b^2*d^4)*x^2 - 72*(4*a^
4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^
2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3
 - a^4*b*d^4)*x)*log(b*x + a)^2 - 72*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^
3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d
^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*log(d*x + c)^2 +
 4*(16*b^5*c^4 - 163*a*b^4*c^3*d + 1068*a^2*b^3*c^2*d^2 - 1036*a^3*b^2*c*d^
3 + 115*a^4*b*d^4)*x + 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13
*a*b^4*d^4)*x^4 + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c
*d^3 - 13*a^3*b^2*d^4)*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x)*log(b*x
 + a) - 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4)*x^4
 + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a^3*b
^2*d^4)*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x - 12*(4*a^4*b*c*d^3 - a
^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^
3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)
*x)*log(b*x + a))*log(d*x + c))/(a^4*b^6*c^4*g^5 - 4*a^5*b^5*c^3*d*g^5 + 6*
a^6*b^4*c^2*d^2*g^5 - 4*a^7*b^3*c*d^3*g^5 + a^8*b^2*d^4*g^5 + (b^10*c^4*g^5
 - 4*a*b^9*c^3*d*g^5 + 6*a^2*b^8*c^2*d^2*g^5 - 4*a^3*b^7*c*d^3*g^5 + a^4*b^
6*d^4*g^5)*x^4 + 4*(a*b^9*c^4*g^5 - 4*a^2*b^8*c^3*d*g^5 + 6*a^3*b^7*c^2*d^2
*g^5 - 4*a^4*b^6*c*d^3*g^5 + a^5*b^5*d^4*g^5)*x^3 + 6*(a^2*b^8*c^4*g^5 - 4*
a^3*b^7*c^3*d*g^5 + 6*a^4*b^6*c^2*d^2*g^5 - 4*a^5*b^5*c*d^3*g^5 + a^6*b^4*d
^4*g^5)*x^2 + 4*(a^3*b^7*c^4*g^5 - 4*a^4*b^6*c^3*d*g^5 + 6*a^5*b^5*c^2*d^2*
g^5 - 4*a^6*b^4*c*d^3*g^5 + a^7*b^3*d^4*g^5)*x))*B^2*c*d*i^2 - 1/864*(12*((
13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7*a^5*d^3 - 12*(6*b^5*
c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 6*(6*b^5*c^3 - 46*a*b^4*c^2*d +
29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3)*x^2 + 4*(10*a*b^4*c^3 - 63*a^2*b^3*c^2*d
+ 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x)/((b^10*c^3 - 3*a*b^9*c^2*d + 3*a^2*b^8
*c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2*b^8*c^2*d + 3*a^3*b^7*
c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^3*b^7*c^2*d + 3*a^4*b^6
*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a^4*b^6*c^2*d + 3*a^5*b^
5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*b^5*c^2*d + 3*a^6*b^4*c
*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*log(b
*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a
^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*log(d*x + c)/
((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d
^4)*g^5))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (115*a^2*b^4*c^4 - 1360*a^
3*b^3*c^3*d + 1512*a^4*b^2*c^2*d^2 - 304*a^5*b*c*d^3 + 37*a^6*d^4 - 12*(108
*b^6*c^3*d - 148*a*b^5*c^2*d^2 + 47*a^2*b^4*c*d^3 - 7*a^3*b^3*d^4)*x^3 + 6*
(36*b^6*c^4 - 712*a*b^5*c^3*d + 903*a^2*b^4*c^2*d^2 - 264*a^3*b^3*c*d^3 + 3
7*a^4*b^2*d^4)*x^2 + 72*(6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b
^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*
```

```
b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4
*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*x)*log(
b*x + a)^2 + 72*(6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d
^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^
3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4
)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*x)*log(d*x + c)
^2 + 4*(76*a*b^5*c^4 - 1057*a^2*b^4*c^3*d + 1248*a^3*b^3*c^2*d^2 - 304*a^4*
b^2*c*d^3 + 37*a^5*b*d^4)*x - 12*(108*a^4*b^2*c^2*d^2 - 40*a^5*b*c*d^3 + 7*
a^6*d^4 + (108*b^6*c^2*d^2 - 40*a*b^5*c*d^3 + 7*a^2*b^4*d^4)*x^4 + 4*(108*a
*b^5*c^2*d^2 - 40*a^2*b^4*c*d^3 + 7*a^3*b^3*d^4)*x^3 + 6*(108*a^2*b^4*c^2*d
^2 - 40*a^3*b^3*c*d^3 + 7*a^4*b^2*d^4)*x^2 + 4*(108*a^3*b^3*c^2*d^2 - 40*a^
4*b^2*c*d^3 + 7*a^5*b*d^4)*x)*log(b*x + a) + 12*(108*a^4*b^2*c^2*d^2 - 40*a
^5*b*c*d^3 + 7*a^6*d^4 + (108*b^6*c^2*d^2 - 40*a*b^5*c*d^3 + 7*a^2*b^4*d^4)
*x^4 + 4*(108*a*b^5*c^2*d^2 - 40*a^2*b^4*c*d^3 + 7*a^3*b^3*d^4)*x^3 + 6*(10
8*a^2*b^4*c^2*d^2 - 40*a^3*b^3*c*d^3 + 7*a^4*b^2*d^4)*x^2 + 4*(108*a^3*b^3*
c^2*d^2 - 40*a^4*b^2*c*d^3 + 7*a^5*b*d^4)*x - 12*(6*a^4*b^2*c^2*d^2 - 4*a^5
*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*
(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^
2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c
*d^3 + a^5*b*d^4)*x)*log(b*x + a))*log(d*x + c))/(a^4*b^7*c^4*g^5 - 4*a^5*b
^6*c^3*d*g^5 + 6*a^6*b^5*c^2*d^2*g^5 - 4*a^7*b^4*c*d^3*g^5 + a^8*b^3*d^4*g^
5 + (b^11*c^4*g^5 - 4*a*b^10*c^3*d*g^5 + 6*a^2*b^9*c^2*d^2*g^5 - 4*a^3*b^8*
c*d^3*g^5 + a^4*b^7*d^4*g^5)*x^4 + 4*(a*b^10*c^4*g^5 - 4*a^2*b^9*c^3*d*g^5
+ 6*a^3*b^8*c^2*d^2*g^5 - 4*a^4*b^7*c*d^3*g^5 + a^5*b^6*d^4*g^5)*x^3 + 6*(a
^2*b^9*c^4*g^5 - 4*a^3*b^8*c^3*d*g^5 + 6*a^4*b^7*c^2*d^2*g^5 - 4*a^5*b^6*c*
d^3*g^5 + a^6*b^5*d^4*g^5)*x^2 + 4*(a^3*b^8*c^4*g^5 - 4*a^4*b^7*c^3*d*g^5 +
 6*a^5*b^6*c^2*d^2*g^5 - 4*a^6*b^5*c*d^3*g^5 + a^7*b^4*d^4*g^5)*x))*B^2*d^2
*i^2 - 1/72*A*B*d^2*i^2*(12*(6*b^2*x^2 + 4*a*b*x + a^2)*log(b*e*x/(d*x + c)
 + a*e/(d*x + c))/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^
3*b^4*g^5*x + a^4*b^3*g^5) + (13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d + 33*a^4*b*
c*d^2 - 7*a^5*d^3 - 12*(6*b^5*c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 6*
(6*b^5*c^3 - 46*a*b^4*c^2*d + 29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3)*x^2 + 4*(10
*a*b^4*c^3 - 63*a^2*b^3*c^2*d + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x)/((b^10*c
^3 - 3*a*b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(a*b^9*c^3
- 3*a^2*b^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3
 - 3*a^3*b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(a^3*b^7*c^
3 - 3*a^4*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 -
 3*a^5*b^5*c^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^2*c^2*d^2
- 4*a*b*c*d^3 + a^2*d^4)*log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5
*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^2 - 4*a*b*
c*d^3 + a^2*d^4)*log(d*x + c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2
 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5)) - 1/36*A*B*c*d*i^2*(12*(4*b*x + a)*
log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2
*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) + (7*a*b^3*c^3 - 33*a^2*b^2*c
^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(
4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3
*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*
a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a
^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*
a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3
*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^
6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6
*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g
^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2
*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5)) + 1/24*A*B*c^2*i^2*((12
*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6
*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^
3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 +
4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6
```

```
*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 +
4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (
a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) - 12*log(
b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3
*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4
*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d
^4*log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c
*d^3 + a^4*b*d^4)*g^5)) - 1/4*B^2*c^2*i^2*log(b*e*x/(d*x + c) + a*e/(d*x +
c))^2/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x
+ a^4*b*g^5) - 1/6*(4*b*x + a)*A^2*c*d*i^2/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 +
 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12*(6*b^2*x^2 + 4*a
*b*x + a^2)*A^2*d^2*i^2/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2
+ 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/4*A^2*c^2*i^2/(b^5*g^5*x^4 + 4*a*b^4*g
^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5)
```

mupad [B] time = 11.20, size = 1940, normalized size = 6.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
5,x)
```

```
[Out] - log((e*(a + b*x))/(c + d*x))^2*((x*(b*((B^2*c*d*i^2)/(6*b^3*g^5) + (B^2*a
*d^2*i^2)/(12*b^4*g^5)) + (B^2*c*d*i^2)/(2*b^2*g^5) + (B^2*a*d^2*i^2)/(4*b^
3*g^5)) + a*((B^2*c*d*i^2)/(6*b^3*g^5) + (B^2*a*d^2*i^2)/(12*b^4*g^5)) + (B
^2*c^2*i^2)/(4*b^2*g^5) + (B^2*d^2*i^2*x^2)/(2*b^2*g^5))/(4*a^3*x + a^4/b +
 b^3*x^4 + 6*a^2*b*x^2 + 4*a*b^2*x^3) - (B^2*d^4*i^2)/(12*b^3*g^5*(a^2*d^2
+ b^2*c^2 - 2*a*b*c*d))) - ((72*A^2*a^3*d^3*i^2 - 216*A^2*b^3*c^3*i^2 + 37*
B^2*a^3*d^3*i^2 - 27*B^2*b^3*c^3*i^2 + 84*A*B*a^3*d^3*i^2 - 108*A*B*b^3*c^3
*i^2 + 72*A^2*a*b^2*c^2*d*i^2 + 72*A^2*a^2*b*c*d^2*i^2 + 37*B^2*a*b^2*c^2*d
*i^2 + 37*B^2*a^2*b*c*d^2*i^2 + 84*A*B*a*b^2*c^2*d*i^2 + 84*A*B*a^2*b*c*d^2
*i^2)/(12*(a*d - b*c)) + (x^3*(7*B^2*b^3*d^3*i^2 + 12*A*B*b^3*d^3*i^2))/(a*
d - b*c) + (x*(72*A^2*a^2*b*d^3*i^2 + 37*B^2*a^2*b*d^3*i^2 - 144*A^2*b^3*c^
2*d*i^2 - 11*B^2*b^3*c^2*d*i^2 + 72*A^2*a*b^2*c*d^2*i^2 + 37*B^2*a*b^2*c*d^
2*i^2 + 84*A*B*a^2*b*d^3*i^2 - 60*A*B*b^3*c^2*d*i^2 + 84*A*B*a*b^2*c*d^2*i^
2))/(3*(a*d - b*c)) + (x^2*(72*A^2*a*b^2*d^3*i^2 + 37*B^2*a*b^2*d^3*i^2 - 7
2*A^2*b^3*c*d^2*i^2 + 5*B^2*b^3*c*d^2*i^2 + 84*A*B*a*b^2*d^3*i^2 - 12*A*B*b
^3*c*d^2*i^2))/(2*(a*d - b*c)))/(72*a^4*b^3*g^5 + 72*b^7*g^5*x^4 + 288*a^3*
b^4*g^5*x + 288*a*b^6*g^5*x^3 + 432*a^2*b^5*g^5*x^2) - (log((e*(a + b*x))/(
c + d*x))*(x^2*((A*B*d*i^2)/(b^2*g^5) + (B^2*d^4*i^2*(b*(b*((4*a^2*d^2 + b^
2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (4*a^2*d^2 + b
^2*c^2 - 5*a*b*c*d)/(6*d^3) + (a*(a*d - b*c))/(2*d^2)) - a*((b^2*c - a*b*d)
/(4*d^2) - (b*(a*d - b*c))/(2*d^2)) + (b^3*c^2 + 4*a^2*b*d^2 - 5*a*b^2*c*d)
/(4*d^3)))/(6*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) + a*((B*i^2*(4*A*b*
c - B*a*d + B*b*c))/(12*b^4*g^5) + (A*B*a*d*i^2)/(6*b^4*g^5)) + x*(b*((B*i^
2*(4*A*b*c - B*a*d + B*b*c))/(12*b^4*g^5) + (A*B*a*d*i^2)/(6*b^4*g^5)) + (B
*i^2*(4*A*b*c - B*a*d + B*b*c))/(4*b^3*g^5) + (B^2*d^4*i^2*(b*(a*((4*a^2*d^
2 + b^2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (6*a^3*d
^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(12*b*d^4)) + a*(b*((4*a^2*d
^2 + b^2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2)) + (4*a^2*
d^2 + b^2*c^2 - 5*a*b*c*d)/(6*d^3) + (a*(a*d - b*c))/(2*d^2)) + (6*a^3*d^3
- b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(4*d^4)))/(6*b^3*g^5*(a^2*d^2 +
 b^2*c^2 - 2*a*b*c*d)) + (A*B*a*d*i^2)/(2*b^3*g^5)) + (B*i^2*(6*A*b^2*c^2 -
 2*B*a^2*d^2 + B*b^2*c^2 + B*a*b*c*d))/(12*b^4*d*g^5) + (B^2*d^4*i^2*(a*(a*
((4*a^2*d^2 + b^2*c^2 - 5*a*b*c*d)/(12*b*d^3) + (a*(a*d - b*c))/(4*b*d^2))
+ (6*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2)/(12*b*d^4)) + (4*a
^4*d^4 + b^4*c^4 + 10*a^2*b^2*c^2*d^2 - 5*a*b^3*c^3*d - 10*a^3*b*c*d^3)/(4*
b*d^5)))/(6*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B^2*d^4*i^2*x^3*(b*
((b^2*c - a*b*d)/(4*d^2) - (b*(a*d - b*c))/(2*d^2)) + (b^3*c - a*b^2*d)/(4*
```

```
d^2)))/(6*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))))/((4*a^3*x)/d + a^4/(b*
d) + (b^3*x^4)/d + (6*a^2*b*x^2)/d + (4*a*b^2*x^3)/d) - (B*d^4*i^2*atan(((2
*b*d*x - (72*b^5*c^2*g^5 - 72*a^2*b^3*d^2*g^5)/(72*b^3*g^5*(a*d - b*c)))*1i
)/(a*d - b*c))*(12*A + 7*B)*1i)/(36*b^3*g^5*(a*d - b*c)^2)
```

sympy [B] time = 134.61, size = 2055, normalized size = 6.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**5,x)
```

```
[Out] -B*d**4*i**2*(12*A + 7*B)*log(x + (12*A*B*a*d**5*i**2 + 12*A*B*b*c*d**4*i**
2 + 7*B**2*a*d**5*i**2 + 7*B**2*b*c*d**4*i**2 - B*a**3*d**7*i**2*(12*A + 7*
B)/(a*d - b*c)**2 + 3*B*a**2*b*c*d**6*i**2*(12*A + 7*B)/(a*d - b*c)**2 - 3*
B*a*b**2*c**2*d**5*i**2*(12*A + 7*B)/(a*d - b*c)**2 + B*b**3*c**3*d**4*i**2
*(12*A + 7*B)/(a*d - b*c)**2)/(24*A*B*b*d**5*i**2 + 14*B**2*b*d**5*i**2))/(
72*b**3*g**5*(a*d - b*c)**2) + B*d**4*i**2*(12*A + 7*B)*log(x + (12*A*B*a*d
**5*i**2 + 12*A*B*b*c*d**4*i**2 + 7*B**2*a*d**5*i**2 + 7*B**2*b*c*d**4*i**2
 + B*a**3*d**7*i**2*(12*A + 7*B)/(a*d - b*c)**2 - 3*B*a**2*b*c*d**6*i**2*(1
2*A + 7*B)/(a*d - b*c)**2 + 3*B*a*b**2*c**2*d**5*i**2*(12*A + 7*B)/(a*d - b
*c)**2 - B*b**3*c**3*d**4*i**2*(12*A + 7*B)/(a*d - b*c)**2)/(24*A*B*b*d**5*
i**2 + 14*B**2*b*d**5*i**2))/(72*b**3*g**5*(a*d - b*c)**2) + (4*B**2*a*c**3
*d*i**2 + 12*B**2*a*c**2*d**2*i**2*x + 12*B**2*a*c*d**3*i**2*x**2 + 4*B**2*
a*d**4*i**2*x**3 - 3*B**2*b*c**4*i**2 - 8*B**2*b*c**3*d*i**2*x - 6*B**2*b*c
**2*d**2*i**2*x**2 + B**2*b*d**4*i**2*x**4)*log(e*(a + b*x)/(c + d*x))**2/(
12*a**6*d**2*g**5 - 24*a**5*b*c*d*g**5 + 48*a**5*b*d**2*g**5*x + 12*a**4*b*
*2*c**2*g**5 - 96*a**4*b**2*c*d*g**5*x + 72*a**4*b**2*d**2*g**5*x**2 + 48*a
**3*b**3*c**2*g**5*x - 144*a**3*b**3*c*d*g**5*x**2 + 48*a**3*b**3*d**2*g**5
*x**3 + 72*a**2*b**4*c**2*g**5*x**2 - 96*a**2*b**4*c*d*g**5*x**3 + 12*a**2*
b**4*d**2*g**5*x**4 + 48*a*b**5*c**2*g**5*x**3 - 24*a*b**5*c*d*g**5*x**4 +
12*b**6*c**2*g**5*x**4) + (-12*A*B*a**3*d**3*i**2 - 12*A*B*a**2*b*c*d**2*i*
*2 - 48*A*B*a**2*b*d**3*i**2*x - 12*A*B*a*b**2*c**2*d*i**2 - 48*A*B*a*b**2*
c*d**2*i**2*x - 72*A*B*a*b**2*d**3*i**2*x**2 + 36*A*B*b**3*c**3*i**2 + 96*A
*B*b**3*c**2*d*i**2*x + 72*A*B*b**3*c*d**2*i**2*x**2 - 7*B**2*a**3*d**3*i**
2 - 7*B**2*a**2*b*c*d**2*i**2 - 28*B**2*a**2*b*d**3*i**2*x - 7*B**2*a*b**2*
c**2*d*i**2 - 28*B**2*a*b**2*c*d**2*i**2*x - 42*B**2*a*b**2*d**3*i**2*x**2
 + 9*B**2*b**3*c**3*i**2 + 20*B**2*b**3*c**2*d*i**2*x + 6*B**2*b**3*c*d**2*i
**2*x**2 - 12*B**2*b**3*d**3*i**2*x**3)*log(e*(a + b*x)/(c + d*x))/(72*a**5
*b**3*d*g**5 - 72*a**4*b**4*c*g**5 + 288*a**4*b**4*d*g**5*x - 288*a**3*b**5
*c*g**5*x + 432*a**3*b**5*d*g**5*x**2 - 432*a**2*b**6*c*g**5*x**2 + 288*a**
2*b**6*d*g**5*x**3 - 288*a*b**7*c*g**5*x**3 + 72*a*b**7*d*g**5*x**4 - 72*b*
*8*c*g**5*x**4) + (-72*A**2*a**3*d**3*i**2 - 72*A**2*a**2*b*c*d**2*i**2 - 7
2*A**2*a*b**2*c**2*d*i**2 + 216*A**2*b**3*c**3*i**2 - 84*A*B*a**3*d**3*i**2
 - 84*A*B*a**2*b*c*d**2*i**2 - 84*A*B*a*b**2*c**2*d*i**2 + 108*A*B*b**3*c**
3*i**2 - 37*B**2*a**3*d**3*i**2 - 37*B**2*a**2*b*c*d**2*i**2 - 37*B**2*a*b*
*2*c**2*d*i**2 + 27*B**2*b**3*c**3*i**2 + x**3*(-144*A*B*b**3*d**3*i**2 - 8
4*B**2*b**3*d**3*i**2) + x**2*(-432*A**2*a*b**2*d**3*i**2 + 432*A**2*b**3*c
*d**2*i**2 - 504*A*B*a*b**2*d**3*i**2 + 72*A*B*b**3*c*d**2*i**2 - 222*B**2*
a*b**2*d**3*i**2 - 30*B**2*b**3*c*d**2*i**2) + x*(-288*A**2*a**2*b*d**3*i**
2 - 288*A**2*a*b**2*c*d**2*i**2 + 576*A**2*b**3*c**2*d*i**2 - 336*A*B*a**2*
b*d**3*i**2 - 336*A*B*a*b**2*c*d**2*i**2 + 240*A*B*b**3*c**2*d*i**2 - 148*B
**2*a**2*b*d**3*i**2 - 148*B**2*a*b**2*c*d**2*i**2 + 44*B**2*b**3*c**2*d*i*
*2))/(864*a**5*b**3*d*g**5 - 864*a**4*b**4*c*g**5 + x**4*(864*a*b**7*d*g**5
 - 864*b**8*c*g**5) + x**3*(3456*a**2*b**6*d*g**5 - 3456*a*b**7*c*g**5) + x
**2*(5184*a**3*b**5*d*g**5 - 5184*a**2*b**6*c*g**5) + x*(3456*a**4*b**4*d*g
**5 - 3456*a**3*b**5*c*g**5))
```

3.73 $\int \frac{(ci+dix)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^6}\,dx$

Optimal. Leaf size=463

$$-\frac{b^2i^2(c+dx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{5g^6(a+bx)^5(bc-ad)^3}-\frac{2b^2Bi^2(c+dx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{25g^6(a+bx)^5(bc-ad)^3}-\frac{d^2i^2(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+\right.}{3g^6(a+bx)^3(bc-ad)^3}$$

```
[Out] -2/27*B^2*d^2*i^2*(d*x+c)^3/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/16*b*B^2*d*i^2*(d*
x+c)^4/(-a*d+b*c)^3/g^6/(b*x+a)^4-2/125*b^2*B^2*i^2*(d*x+c)^5/(-a*d+b*c)^3/
g^6/(b*x+a)^5-2/9*B*d^2*i^2*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c
)^3/g^6/(b*x+a)^3+1/4*b*B*d*i^2*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d
+b*c)^3/g^6/(b*x+a)^4-2/25*b^2*B*i^2*(d*x+c)^5*(A+B*ln(e*(b*x+a)/(d*x+c)))/
(-a*d+b*c)^3/g^6/(b*x+a)^5-1/3*d^2*i^2*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c))
)^2/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/2*b*d*i^2*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x
+c)))^2/(-a*d+b*c)^3/g^6/(b*x+a)^4-1/5*b^2*i^2*(d*x+c)^5*(A+B*ln(e*(b*x+a)/
(d*x+c)))^2/(-a*d+b*c)^3/g^6/(b*x+a)^5
```

Rubi [C] time = 4.22, antiderivative size = 1009, normalized size of antiderivative = 2.18, number of steps used = 116, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.262, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i^2\log^2(a+bx)d^5}{30b^3(bc-ad)^3g^6}+\frac{B^2i^2\log^2(c+dx)d^5}{30b^3(bc-ad)^3g^6}-\frac{47B^2i^2\log(a+bx)d^5}{900b^3(bc-ad)^3g^6}-\frac{Bi^2\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)d^5}{15b^3(bc-ad)^3g^6}+\frac{47}{9}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^
6,x]
```

```
[Out] (-2*B^2*(b*c - a*d)^2*i^2)/(125*b^3*g^6*(a + b*x)^5) - (7*B^2*d*(b*c - a*d)
*i^2)/(400*b^3*g^6*(a + b*x)^4) + (43*B^2*d^2*i^2)/(2700*b^3*g^6*(a + b*x)^
3) - (13*B^2*d^3*i^2)/(1800*b^3*(b*c - a*d)*g^6*(a + b*x)^2) - (47*B^2*d^4*
i^2)/(900*b^3*(b*c - a*d)^2*g^6*(a + b*x)) - (47*B^2*d^5*i^2*Log[a + b*x])/
(900*b^3*(b*c - a*d)^3*g^6) + (B^2*d^5*i^2*Log[a + b*x]^2)/(30*b^3*(b*c - a
*d)^3*g^6) - (2*B*(b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(
25*b^3*g^6*(a + b*x)^5) - (3*B*d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(
c + d*x)]))/(20*b^3*g^6*(a + b*x)^4) - (B*d^2*i^2*(A + B*Log[(e*(a + b*x))/
(c + d*x)]))/(45*b^3*g^6*(a + b*x)^3) + (B*d^3*i^2*(A + B*Log[(e*(a + b*x))
/(c + d*x)]))/(30*b^3*(b*c - a*d)*g^6*(a + b*x)^2) - (B*d^4*i^2*(A + B*Log[
(e*(a + b*x))/(c + d*x)]))/(15*b^3*(b*c - a*d)^2*g^6*(a + b*x)) - (B*d^5*i^
2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(15*b^3*(b*c - a*d)^3*
g^6) - ((b*c - a*d)^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(5*b^3*g^
6*(a + b*x)^5) - (d*(b*c - a*d)*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)
/(2*b^3*g^6*(a + b*x)^4) - (d^2*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)
/(3*b^3*g^6*(a + b*x)^3) + (47*B^2*d^5*i^2*Log[c + d*x])/(900*b^3*(b*c - a*
d)^3*g^6) - (B^2*d^5*i^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(1
5*b^3*(b*c - a*d)^3*g^6) + (B*d^5*i^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*
Log[c + d*x])/(15*b^3*(b*c - a*d)^3*g^6) + (B^2*d^5*i^2*Log[c + d*x]^2)/(30
*b^3*(b*c - a*d)^3*g^6) - (B^2*d^5*i^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c
- a*d)])/(15*b^3*(b*c - a*d)^3*g^6) - (B^2*d^5*i^2*PolyLog[2, -((d*(a + b*x
))/(b*c - a*d))])/(15*b^3*(b*c - a*d)^3*g^6) - (B^2*d^5*i^2*PolyLog[2, (b*(
c + d*x))/(b*c - a*d)])/(15*b^3*(b*c - a*d)^3*g^6)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
```

```
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(73c+73dx)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^6}\,dx = \int \left(\frac{5329(bc-ad)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^2g^6(a+bx)^6} + \frac{10658d(bc-ad)\left(A+\right.}{b^2g^6(a+b}\right.$$

$$= \frac{(5329d^2)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^4}dx}{b^2g^6} + \frac{(10658d(bc-ad))\int \frac{\left(A+B\log\left(\frac{e(a+b}{c+d}\right.\right.}{(a+bx)^5}}{b^2g^6}$$

$$= -\frac{5329(bc-ad)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{5b^3g^6(a+bx)^5} - \frac{5329d(bc-ad)\left(A+B\,\text{lo}\right.}{2b^3g^6(a+bx)}$$

$$= -\frac{5329(bc-ad)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{5b^3g^6(a+bx)^5} - \frac{5329d(bc-ad)\left(A+B\,\text{lo}\right.}{2b^3g^6(a+bx)}$$

$$= -\frac{5329(bc-ad)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{5b^3g^6(a+bx)^5} - \frac{5329d(bc-ad)\left(A+B\,\text{lo}\right.}{2b^3g^6(a+bx)}$$

$$= -\frac{5329(bc-ad)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{5b^3g^6(a+bx)^5} - \frac{5329d(bc-ad)\left(A+B\,\text{lo}\right.}{2b^3g^6(a+bx)}$$

$$= -\frac{10658B(bc-ad)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{25b^3g^6(a+bx)^5} - \frac{15987Bd(bc-ad)\left(A+\right.}{20b^3g^6(a+}$$

$$= -\frac{10658B(bc-ad)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{25b^3g^6(a+bx)^5} - \frac{15987Bd(bc-ad)\left(A+\right.}{20b^3g^6(a+}$$

$$= -\frac{10658B(bc-ad)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{25b^3g^6(a+bx)^5} - \frac{15987Bd(bc-ad)\left(A+\right.}{20b^3g^6(a+}$$

$$= -\frac{10658B^2(bc-ad)^2}{125b^3g^6(a+bx)^5} - \frac{37303B^2d(bc-ad)}{400b^3g^6(a+bx)^4} + \frac{229147B^2d^2}{2700b^3g^6(a+bx)^3} -$$

$$= -\frac{10658B^2(bc-ad)^2}{125b^3g^6(a+bx)^5} - \frac{37303B^2d(bc-ad)}{400b^3g^6(a+bx)^4} + \frac{229147B^2d^2}{2700b^3g^6(a+bx)^3} -$$

$$= -\frac{10658B^2(bc-ad)^2}{125b^3g^6(a+bx)^5} - \frac{37303B^2d(bc-ad)}{400b^3g^6(a+bx)^4} + \frac{229147B^2d^2}{2700b^3g^6(a+bx)^3} -$$

$$= -\frac{10658B^2(bc-ad)^2}{125b^3g^6(a+bx)^5} - \frac{37303B^2d(bc-ad)}{400b^3g^6(a+bx)^4} + \frac{229147B^2d^2}{2700b^3g^6(a+bx)^3} -$$

Mathematica [C] time = 4.70, size = 2220, normalized size = 4.79

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x)^6,x]
```

```
[Out] -1/54000*(i^2*(10800*(b*c - a*d)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 +
 27000*d*(b*c - a*d)^4*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 1
8000*d^2*(-(b*c) + a*d)^3*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^
2 + 1000*B*d^2*(a + b*x)^2*(12*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c +
d*x)]) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])
+ 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 36*
d^3*(a + b*x)^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 36*d^3*
(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 36*B*d^2*(a
 + b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x])
 - 9*B*d*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a
 + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*(2*(b*c - a*
d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*
(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3*(a +
b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*
PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*(a + b*x)^3*((2*Log[(d
*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*
(c + d*x))/(b*c - a*d)])) + 375*B*d*(a + b*x)*(36*(b*c - a*d)^4*(A + B*Log[
(e*(a + b*x))/(c + d*x)]) + 48*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[(e*(
a + b*x))/(c + d*x)]) + 72*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[(e*(a +
 b*x))/(c + d*x)]) + 144*d^3*(-(b*c) + a*d)*(a + b*x)^3*(A + B*Log[(e*(a +
b*x))/(c + d*x)]) - 144*d^4*(a + b*x)^4*Log[a + b*x]*(A + B*Log[(e*(a + b*x
))/(c + d*x)]) + 144*d^4*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])*L
og[c + d*x] - 144*B*d^3*(a + b*x)^3*(b*c - a*d + d*(a + b*x)*Log[a + b*x] -
 d*(a + b*x)*Log[c + d*x]) + 36*B*d^2*(a + b*x)^2*((b*c - a*d)^2 + 2*d*(-(b
*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*L
og[c + d*x]) - 8*B*d*(a + b*x)*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*
x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3
*(a + b*x)^3*Log[c + d*x]) + 3*B*(3*(b*c - a*d)^4 + 4*d*(-(b*c) + a*d)^3*(a
 + b*x) + 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 12*d^3*(-(b*c) + a*d)*(a + b*x)
^3 - 12*d^4*(a + b*x)^4*Log[a + b*x] + 12*d^4*(a + b*x)^4*Log[c + d*x]) + 7
2*B*d^4*(a + b*x)^4*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c
- a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 72*B*d^4*(a + b*x)
^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*P
olyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 6*B*(-225*a*B*d*(b*c - a*d)^4 + 14
4*B*(b*c - a*d)^5 - 225*b*B*d*(b*c - a*d)^4*x + 300*a*B*d^2*(b*c - a*d)^3*(
a + b*x) - 180*B*d*(b*c - a*d)^4*(a + b*x) + 300*b*B*d^2*(b*c - a*d)^3*x*(a
 + b*x) - 450*a*B*d^3*(b*c - a*d)^2*(a + b*x)^2 + 640*B*d^2*(b*c - a*d)^3*(
a + b*x)^2 - 450*b*B*d^3*(b*c - a*d)^2*x*(a + b*x)^2 + 900*a*B*d^4*(b*c - a
*d)*(a + b*x)^3 - 1860*B*d^3*(b*c - a*d)^2*(a + b*x)^3 + 900*b*B*d^4*(b*c -
 a*d)*x*(a + b*x)^3 + 3600*b*B*c*d^4*(a + b*x)^4 - 3600*a*B*d^5*(a + b*x)^4
 + 3720*B*d^4*(b*c - a*d)*(a + b*x)^4 + 900*a*B*d^5*(a + b*x)^4*Log[a + b*x
] + 900*b*B*d^5*x*(a + b*x)^4*Log[a + b*x] + 7320*B*d^5*(a + b*x)^5*Log[a +
 b*x] + 720*(b*c - a*d)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 900*d*(b*c
 - a*d)^4*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 1200*d^2*(b*c -
a*d)^3*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 1800*d^3*(b*c - a
*d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 3600*d^4*(b*c - a*
d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 3600*d^5*(a + b*x)^5*
Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 900*a*B*d^5*(a + b*x)^4
*Log[c + d*x] - 900*b*B*d^5*x*(a + b*x)^4*Log[c + d*x] - 7320*B*d^5*(a + b*
x)^5*Log[c + d*x] - 3600*d^5*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)
])*Log[c + d*x] - 1800*B*d^5*(a + b*x)^5*(Log[a + b*x]*(Log[a + b*x] - 2*Lo
g[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])
 + 1800*B*d^5*(a + b*x)^5*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d
*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))))/(b^3*(b*c -
 a*d)^3*g^6*(a + b*x)^5)
```

fricas [B] time = 0.68, size = 1323, normalized size = 2.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, alg
orithm="fricas")
```

```
[Out] -1/54000*(60*((60*A*B + 47*B^2)*b^5*c*d^4 - (60*A*B + 47*B^2)*a*b^4*d^5)*i^
2*x^4 - 30*((60*A*B - 13*B^2)*b^5*c^2*d^3 - 50*(12*A*B + 7*B^2)*a*b^4*c*d^4
 + 3*(180*A*B + 121*B^2)*a^2*b^3*d^5)*i^2*x^3 + 10*(2*(900*A^2 + 60*A*B - 4
3*B^2)*b^5*c^3*d^2 - 75*(72*A^2 + 12*A*B - 5*B^2)*a*b^4*c^2*d^3 + 600*(9*A^
2 + 6*A*B + 2*B^2)*a^2*b^3*c*d^4 - (1800*A^2 + 2820*A*B + 1489*B^2)*a^3*b^2
*d^5)*i^2*x^2 + 5*(27*(200*A^2 + 60*A*B + 7*B^2)*b^5*c^4*d - 100*(144*A^2 +
 60*A*B + 11*B^2)*a*b^4*c^3*d^2 + 1200*(9*A^2 + 6*A*B + 2*B^2)*a^2*b^3*c^2*
d^3 - (1800*A^2 + 2820*A*B + 1489*B^2)*a^4*b*d^5)*i^2*x + (432*(25*A^2 + 10
*A*B + 2*B^2)*b^5*c^5 - 3375*(8*A^2 + 4*A*B + B^2)*a*b^4*c^4*d + 2000*(9*A^
2 + 6*A*B + 2*B^2)*a^2*b^3*c^3*d^2 - (1800*A^2 + 2820*A*B + 1489*B^2)*a^5*d
^5)*i^2 + 1800*(B^2*b^5*d^5*i^2*x^5 + 5*B^2*a*b^4*d^5*i^2*x^4 + 10*B^2*a^2*
b^3*d^5*i^2*x^3 + 10*(B^2*b^5*c^3*d^2 - 3*B^2*a*b^4*c^2*d^3 + 3*B^2*a^2*b^3
*c*d^4)*i^2*x^2 + 5*(3*B^2*b^5*c^4*d - 8*B^2*a*b^4*c^3*d^2 + 6*B^2*a^2*b^3*
c^2*d^3)*i^2*x + (6*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 10*B^2*a^2*b^3*c^3*d
^2)*i^2)*log((b*e*x + a*e)/(d*x + c))^2 + 60*((60*A*B + 47*B^2)*b^5*d^5*i^2
*x^5 + 5*(12*B^2*b^5*c*d^4 + 5*(12*A*B + 7*B^2)*a*b^4*d^5)*i^2*x^4 - 10*(3*
B^2*b^5*c^2*d^3 - 30*B^2*a*b^4*c*d^4 - 20*(3*A*B + B^2)*a^2*b^3*d^5)*i^2*x^
3 + 10*(2*(30*A*B + B^2)*b^5*c^3*d^2 - 15*(12*A*B + B^2)*a*b^4*c^2*d^3 + 60
*(3*A*B + B^2)*a^2*b^3*c*d^4)*i^2*x^2 + 5*(9*(20*A*B + 3*B^2)*b^5*c^4*d - 2
0*(24*A*B + 5*B^2)*a*b^4*c^3*d^2 + 120*(3*A*B + B^2)*a^2*b^3*c^2*d^3)*i^2*x
 + (72*(5*A*B + B^2)*b^5*c^5 - 225*(4*A*B + B^2)*a*b^4*c^4*d + 200*(3*A*B +
 B^2)*a^2*b^3*c^3*d^2)*i^2)*log((b*e*x + a*e)/(d*x + c)))/((b^11*c^3 - 3*a*
b^10*c^2*d + 3*a^2*b^9*c*d^2 - a^3*b^8*d^3)*g^6*x^5 + 5*(a*b^10*c^3 - 3*a^2
*b^9*c^2*d + 3*a^3*b^8*c*d^2 - a^4*b^7*d^3)*g^6*x^4 + 10*(a^2*b^9*c^3 - 3*a
^3*b^8*c^2*d + 3*a^4*b^7*c*d^2 - a^5*b^6*d^3)*g^6*x^3 + 10*(a^3*b^8*c^3 - 3
*a^4*b^7*c^2*d + 3*a^5*b^6*c*d^2 - a^6*b^5*d^3)*g^6*x^2 + 5*(a^4*b^7*c^3 -
3*a^5*b^6*c^2*d + 3*a^6*b^5*c*d^2 - a^7*b^4*d^3)*g^6*x + (a^5*b^6*c^3 - 3*a
^6*b^5*c^2*d + 3*a^7*b^4*c*d^2 - a^8*b^3*d^3)*g^6)
```

giac [A] time = 3.09, size = 709, normalized size = 1.53

$$\left(10800\,B^2b^2e^6\log\left(\frac{bxe+ae}{dx+c}\right)^2-\frac{27000\,(bxe+ae)B^2bde^5\log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c}+\frac{18000\,(bxe+ae)^2B^2d^2e^4\log\left(\frac{bxe+ae}{dx+c}\right)^2}{(dx+c)^2}+21600\,ABb^2e^6\log\left(\frac{bxe}{dx}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, alg
orithm="giac")
```

```
[Out] 1/54000*(10800*B^2*b^2*e^6*log((b*x*e + a*e)/(d*x + c))^2 - 27000*(b*x*e +
a*e)*B^2*b*d*e^5*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 18000*(b*x*e +
a*e)^2*B^2*d^2*e^4*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c)^2 + 21600*A*B*b
^2*e^6*log((b*x*e + a*e)/(d*x + c)) + 4320*B^2*b^2*e^6*log((b*x*e + a*e)/(d
*x + c)) - 54000*(b*x*e + a*e)*A*B*b*d*e^5*log((b*x*e + a*e)/(d*x + c))/(d*
x + c) - 13500*(b*x*e + a*e)*B^2*b*d*e^5*log((b*x*e + a*e)/(d*x + c))/(d*x
+ c) + 36000*(b*x*e + a*e)^2*A*B*d^2*e^4*log((b*x*e + a*e)/(d*x + c))/(d*x
+ c)^2 + 12000*(b*x*e + a*e)^2*B^2*d^2*e^4*log((b*x*e + a*e)/(d*x + c))/(d*
x + c)^2 + 10800*A^2*b^2*e^6 + 4320*A*B*b^2*e^6 + 864*B^2*b^2*e^6 - 27000*(
b*x*e + a*e)*A^2*b*d*e^5/(d*x + c) - 13500*(b*x*e + a*e)*A*B*b*d*e^5/(d*x +
 c) - 3375*(b*x*e + a*e)*B^2*b*d*e^5/(d*x + c) + 18000*(b*x*e + a*e)^2*A^2*
d^2*e^4/(d*x + c)^2 + 12000*(b*x*e + a*e)^2*A*B*d^2*e^4/(d*x + c)^2 + 4000*
(b*x*e + a*e)^2*B^2*d^2*e^4/(d*x + c)^2)*(b*c/((b*c*e - a*d*e)*(b*c - a*d))
 - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^5*b^2*c^2*g^6/(d*x + c
)^5 - 2*(b*x*e + a*e)^5*a*b*c*d*g^6/(d*x + c)^5 + (b*x*e + a*e)^5*a^2*d^2*g
^6/(d*x + c)^5)
```

maple [B] time = 0.05, size = 2761, normalized size = 5.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^6,x)
```

```
[Out] -2/3*d^2*e^3*i^2/(a*d-b*c)^4/g^6*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-d^2*e^4*i^2/(a*d-b*c)^4/g^6*A*B*b/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+
d*e^4*i^2/(a*d-b*c)^4/g^6*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2/5*d*e^5*i^2/(a*d-b*c)^4/g^6*A*B*b^2/(1
/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1
/3*d^3*e^3*i^2/(a*d-b*c)^4/g^6*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
3*a+2/27*d^3*e^3*i^2/(a*d-b*c)^4/g^6*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b
/d*e)^3*a-2/125*e^5*i^2/(a*d-b*c)^4/g^6*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*
c/d*e+b/d*e)^5*c-1/5*e^5*i^2/(a*d-b*c)^4/g^6*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+
c)*b*c/d*e+b/d*e)^5*c-1/3*d^2*e^3*i^2/(a*d-b*c)^4/g^6*B^2/(1/(d*x+c)*a*e-1/
(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c+1/3*d^3*e^3*
i^2/(a*d-b*c)^4/g^6*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)^2*a+1/2*d*e^4*i^2/(a*d-b*c)^4/g^6*A^2*b^2/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c+1/5*d*e^5*i^2/(a*d-b*c)^4/g^6*A^2*b^2/(1/
(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a+2/9*d^3*e^3*i^2/(a*d-b*c)^4/g^6*A*
B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-2/25*e^5*i^2/(a*d-b*c)^4/g^6*
B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*c+2/25*d*e^5*i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*
c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2/3*d^3*e^3*i^2/(a*d-b*c)^
4/g^6*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)*a-2/9*d^2*e^3*i^2/(a*d-b*c)^4/g^6*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c
/d*e+b/d*e)^3*b*c-1/4*d^2*e^4*i^2/(a*d-b*c)^4/g^6*A*B*b/(1/(d*x+c)*a*e-1/(d
*x+c)*b*c/d*e+b/d*e)^4*a-1/2*d^2*e^4*i^2/(a*d-b*c)^4/g^6*B^2*b/(1/(d*x+c)*a
*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/2*d*e^4
*i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-1/4*d^2*e^4*i^2/(a*d-b*c)^4/g^6*B^2*b/(1/(d
*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/4*
d*e^4*i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/5*d*e^5*i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1
/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a
-2/25*e^5*i^2/(a*d-b*c)^4/g^6*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)^5*c-2/27*d^2*e^3*i^2/(a*d-b*c)^4/g^6*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*
e+b/d*e)^3*b*c+2/125*d*e^5*i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1/(d*x+c)*a*e-1/(d*
x+c)*b*c/d*e+b/d*e)^5*a-1/16*d^2*e^4*i^2/(a*d-b*c)^4/g^6*B^2*b/(1/(d*x+c)*a
*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+1/16*d*e^4*i^2/(a*d-b*c)^4/g^6*B^2*b^2/(1/(
d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c-1/3*d^2*e^3*i^2/(a*d-b*c)^4/g^6*A^2
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*b*c-1/2*d^2*e^4*i^2/(a*d-b*c)^4/
g^6*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a+2/9*d^3*e^3*i^2/(a*d-
b*c)^4/g^6*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)*a-1/5*e^5*i^2/(a*d-b*c)^4/g^6*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c
)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+1/4*d*e^4*i^2/(a*d-b
*c)^4/g^6*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*c+2/25*d*e^5*i^
2/(a*d-b*c)^4/g^6*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a-2/5*e
^5*i^2/(a*d-b*c)^4/g^6*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/9*d^2*e^3*i^2/(a*d-b*c)^4/g^6*B^2/(1/(d*x
+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c
```

maxima [B] time = 12.03, size = 10880, normalized size = 23.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, alg
orithm="maxima")
```

```
[Out] -1/10*(5*b*x + a)*B^2*c*d*i^2*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^7*g
^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*
b^3*g^6*x + a^5*b^2*g^6) - 1/30*(10*b^2*x^2 + 5*a*b*x + a^2)*B^2*d^2*i^2*lo
g(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^
2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) - 1/900
0*(60*((60*b^4*d^4*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2
- 163*a^3*b*c*d^3 + 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2*
b^4*c^2*d^2 - 13*a*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a*
b^3*c^2*d^2 + 43*a^2*b^2*c*d^3 - 77*a^3*b*d^4)*x)/((b^10*c^4 - 4*a*b^9*c^3*
d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c
^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g
^6*x^4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*
c*d^3 + a^6*b^4*d^4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^
5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5
*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*g^6*x + (a^
5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d
^4)*g^6) + 60*d^5*log(b*x + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d
^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) - 60*d^5*log(d*
x + c)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3
+ 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) +
 (144*b^5*c^5 - 1125*a*b^4*c^4*d + 4000*a^2*b^3*c^3*d^2 - 9000*a^3*b^2*c^2*
d^3 + 18000*a^4*b*c*d^4 - 12019*a^5*d^5 + 8220*(b^5*c*d^4 - a*b^4*d^5)*x^4
- 30*(77*b^5*c^2*d^3 - 1250*a*b^4*c*d^4 + 1173*a^2*b^3*d^5)*x^3 + 10*(94*b^
5*c^3*d^2 - 975*a*b^4*c^2*d^3 + 6600*a^2*b^3*c*d^4 - 5719*a^3*b^2*d^5)*x^2
- 1800*(b^5*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5
*x^2 + 5*a^4*b*d^5*x + a^5*d^5)*log(b*x + a)^2 - 1800*(b^5*d^5*x^5 + 5*a*b^
4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d
^5)*log(d*x + c)^2 - 5*(81*b^5*c^4*d - 700*a*b^4*c^3*d^2 + 3000*a^2*b^3*c^2
*d^3 - 10800*a^3*b^2*c*d^4 + 8419*a^4*b*d^5)*x + 8220*(b^5*d^5*x^5 + 5*a*b^
4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d
^5)*log(b*x + a) - 60*(137*b^5*d^5*x^5 + 685*a*b^4*d^5*x^4 + 1370*a^2*b^3*d
^5*x^3 + 1370*a^3*b^2*d^5*x^2 + 685*a^4*b*d^5*x + 137*a^5*d^5 - 60*(b^5*d^5
*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*
d^5*x + a^5*d^5)*log(b*x + a))*log(d*x + c))/(a^5*b^6*c^5*g^6 - 5*a^6*b^5*c
^4*d*g^6 + 10*a^7*b^4*c^3*d^2*g^6 - 10*a^8*b^3*c^2*d^3*g^6 + 5*a^9*b^2*c*d^
4*g^6 - a^10*b*d^5*g^6 + (b^11*c^5*g^6 - 5*a*b^10*c^4*d*g^6 + 10*a^2*b^9*c^
3*d^2*g^6 - 10*a^3*b^8*c^2*d^3*g^6 + 5*a^4*b^7*c*d^4*g^6 - a^5*b^6*d^5*g^6)
*x^5 + 5*(a*b^10*c^5*g^6 - 5*a^2*b^9*c^4*d*g^6 + 10*a^3*b^8*c^3*d^2*g^6 - 1
0*a^4*b^7*c^2*d^3*g^6 + 5*a^5*b^6*c*d^4*g^6 - a^6*b^5*d^5*g^6)*x^4 + 10*(a^
2*b^9*c^5*g^6 - 5*a^3*b^8*c^4*d*g^6 + 10*a^4*b^7*c^3*d^2*g^6 - 10*a^5*b^6*c
^2*d^3*g^6 + 5*a^6*b^5*c*d^4*g^6 - a^7*b^4*d^5*g^6)*x^3 + 10*(a^3*b^8*c^5*g
^6 - 5*a^4*b^7*c^4*d*g^6 + 10*a^5*b^6*c^3*d^2*g^6 - 10*a^6*b^5*c^2*d^3*g^6
+ 5*a^7*b^4*c*d^4*g^6 - a^8*b^3*d^5*g^6)*x^2 + 5*(a^4*b^7*c^5*g^6 - 5*a^5*b
^6*c^4*d*g^6 + 10*a^6*b^5*c^3*d^2*g^6 - 10*a^7*b^4*c^2*d^3*g^6 + 5*a^8*b^3*
c*d^4*g^6 - a^9*b^2*d^5*g^6)*x))*B^2*c^2*i^2 - 1/18000*(60*((27*a*b^4*c^4 -
 148*a^2*b^3*c^3*d + 352*a^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d^4 - 6
0*(5*b^5*c*d^3 - a*b^4*d^4)*x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^
2*b^3*d^4)*x^3 - 10*(10*b^5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*d^3 -
47*a^3*b^2*d^4)*x^2 + 5*(15*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^2*d^2
- 428*a^3*b^2*c*d^3 + 77*a^4*b*d^4)*x)/((b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2*
b^9*c^2*d^2 - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a^
2*b^9*c^3*d + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*x^4 +
10*(a^2*b^9*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a
^6*b^5*d^4)*g^6*x^3 + 10*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2
 - 4*a^6*b^5*c*d^3 + a^7*b^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*
d + 6*a^6*b^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4
 - 4*a^6*b^5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6
```

) - 60*(5*b*c*d^4 - a*d^5)*log(b*x + a)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4 - a*d^5)*log(d*x + c)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (549*a*b^5*c^5 - 4625*a^2*b^4*c^4*d + 19000*a^3*b^3*c^3*d^2 - 63000*a^4*b^2*c^2*d^3 + 51875*a^5*b*c*d^4 - 3799*a^6*d^5 - 60*(625*b^6*c^2*d^3 - 702*a*b^5*c*d^4 + 77*a^2*b^4*d^5)*x^4 + 30*(325*b^6*c^3*d^2 - 5667*a*b^5*c^2*d^3 + 5975*a^2*b^4*c*d^4 - 633*a^3*b^3*d^5)*x^3 - 10*(350*b^6*c^4*d - 3949*a*b^5*c^3*d^2 + 29475*a^2*b^4*c^2*d^3 - 28775*a^3*b^3*c*d^4 + 2899*a^4*b^2*d^5)*x^2 + 1800*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b^5*d^5)*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 + 10*(5*a^2*b^4*c*d^4 - a^3*b^3*d^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5)*x^2 + 5*(5*a^4*b^2*c*d^4 - a^5*b*d^5)*x)*log(b*x + a)^2 + 1800*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b^5*d^5)*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 + 10*(5*a^2*b^4*c*d^4 - a^3*b^3*d^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5)*x^2 + 5*(5*a^4*b^2*c*d^4 - a^5*b*d^5)*x)*log(d*x + c)^2 + 5*(225*b^6*c^5 - 2201*a*b^5*c^4*d + 10900*a^2*b^4*c^3*d^2 - 46200*a^3*b^3*c^2*d^3 + 41075*a^4*b^2*c*d^4 - 3799*a^5*b*d^5)*x - 60*(625*a^5*b*c*d^4 - 77*a^6*d^5 + (625*b^6*c*d^4 - 77*a*b^5*d^5)*x^5 + 5*(625*a*b^5*c*d^4 - 77*a^2*b^4*d^5)*x^4 + 10*(625*a^2*b^4*c*d^4 - 77*a^3*b^3*d^5)*x^3 + 10*(625*a^3*b^3*c*d^4 - 77*a^4*b^2*d^5)*x^2 + 5*(625*a^4*b^2*c*d^4 - 77*a^5*b*d^5)*x)*log(b*x + a) + 60*(625*a^5*b*c*d^4 - 77*a^6*d^5 + (625*b^6*c*d^4 - 77*a*b^5*d^5)*x^5 + 5*(625*a*b^5*c*d^4 - 77*a^2*b^4*d^5)*x^4 + 10*(625*a^2*b^4*c*d^4 - 77*a^3*b^3*d^5)*x^3 + 10*(625*a^3*b^3*c*d^4 - 77*a^4*b^2*d^5)*x^2 + 5*(625*a^4*b^2*c*d^4 - 77*a^5*b*d^5)*x - 60*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b^5*d^5)*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 + 10*(5*a^2*b^4*c*d^4 - a^3*b^3*d^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5)*x^2 + 5*(5*a^4*b^2*c*d^4 - a^5*b*d^5)*x)*log(b*x + a))*log(d*x + c))/(a^5*b^7*c^5*g^6 - 5*a^6*b^6*c^4*d*g^6 + 10*a^7*b^5*c^3*d^2*g^6 - 10*a^8*b^4*c^2*d^3*g^6 + 5*a^9*b^3*c*d^4*g^6 - a^10*b^2*d^5*g^6 + (b^12*c^5*g^6 - 5*a*b^11*c^4*d*g^6 + 10*a^2*b^10*c^3*d^2*g^6 - 10*a^3*b^9*c^2*d^3*g^6 + 5*a^4*b^8*c*d^4*g^6 - a^5*b^7*d^5*g^6)*x^5 + 5*(a*b^11*c^5*g^6 - 5*a^2*b^10*c^4*d*g^6 + 10*a^3*b^9*c^3*d^2*g^6 - 10*a^4*b^8*c^2*d^3*g^6 + 5*a^5*b^7*c*d^4*g^6 - a^6*b^6*d^5*g^6)*x^4 + 10*(a^2*b^10*c^5*g^6 - 5*a^3*b^9*c^4*d*g^6 + 10*a^4*b^8*c^3*d^2*g^6 - 10*a^5*b^7*c^2*d^3*g^6 + 5*a^6*b^6*c*d^4*g^6 - a^7*b^5*d^5*g^6)*x^3 + 10*(a^3*b^9*c^5*g^6 - 5*a^4*b^8*c^4*d*g^6 + 10*a^5*b^7*c^3*d^2*g^6 - 10*a^6*b^6*c^2*d^3*g^6 + 5*a^7*b^5*c*d^4*g^6 - a^8*b^4*d^5*g^6)*x^2 + 5*(a^4*b^8*c^5*g^6 - 5*a^5*b^7*c^4*d*g^6 + 10*a^6*b^6*c^3*d^2*g^6 - 10*a^7*b^5*c^2*d^3*g^6 + 5*a^8*b^4*c*d^4*g^6 - a^9*b^3*d^5*g^6)*x))*B^2*c*d*i^2 - 1/54000*(60*((47*a^2*b^4*c^4 - 278*a^3*b^3*c^3*d + 822*a^4*b^2*c^2*d^2 - 278*a^5*b*c*d^3 + 47*a^6*d^4 + 60*(10*b^6*c^2*d^2 - 5*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 - 30*(10*b^6*c^3*d - 95*a*b^5*c^2*d^2 + 46*a^2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^3 + 10*(20*b^6*c^4 - 140*a*b^5*c^3*d + 537*a^2*b^4*c^2*d^2 - 248*a^3*b^3*c*d^3 + 47*a^4*b^2*d^4)*x^2 + 5*(35*a*b^5*c^4 - 218*a^2*b^4*c^3*d + 702*a^3*b^3*c^2*d^2 - 278*a^4*b^2*c*d^3 + 47*a^5*b*d^4)*x)/((b^12*c^4 - 4*a*b^11*c^3*d + 6*a^2*b^10*c^2*d^2 - 4*a^3*b^9*c*d^3 + a^4*b^8*d^4)*g^6*x^5 + 5*(a*b^11*c^4 - 4*a^2*b^10*c^3*d + 6*a^3*b^9*c^2*d^2 - 4*a^4*b^8*c*d^3 + a^5*b^7*d^4)*g^6*x^4 + 10*(a^2*b^10*c^4 - 4*a^3*b^9*c^3*d + 6*a^4*b^8*c^2*d^2 - 4*a^5*b^7*c*d^3 + a^6*b^6*d^4)*g^6*x^3 + 10*(a^3*b^9*c^4 - 4*a^4*b^8*c^3*d + 6*a^5*b^7*c^2*d^2 - 4*a^6*b^6*c*d^3 + a^7*b^5*d^4)*g^6*x^2 + 5*(a^4*b^8*c^4 - 4*a^5*b^7*c^3*d + 6*a^6*b^6*c^2*d^2 - 4*a^7*b^5*c*d^3 + a^8*b^4*d^4)*g^6*x + (a^5*b^7*c^4 - 4*a^6*b^6*c^3*d + 6*a^7*b^5*c^2*d^2 - 4*a^8*b^4*c*d^3 + a^9*b^3*d^4)*g^6) + 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(b*x + a)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6) - 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(d*x + c)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (1489*a^2*b^5*c^5 - 14375*a^3*b^4*c^4*d + 85000*a^4*b^3*c^3*d^2 - 85000*a^5*b^2*c^2*d^3 + 14375*a^6*b*c*d^4 - 1489*a^7*d^5 + 60*(1100*b^7*c^3*d^2 - 1425*a*b^6*

```
c^2*d^3 + 372*a^2*b^5*c*d^4 - 47*a^3*b^4*d^5)*x^4 - 30*(500*b^7*c^4*d - 982
5*a*b^6*c^3*d^2 + 11937*a^2*b^5*c^2*d^3 - 2975*a^3*b^4*c*d^4 + 363*a^4*b^3*
d^5)*x^3 + 10*(400*b^7*c^5 - 5450*a*b^6*c^4*d + 49189*a^2*b^5*c^3*d^2 - 555
25*a^3*b^4*c^2*d^3 + 12875*a^4*b^3*c*d^4 - 1489*a^5*b^2*d^5)*x^2 - 1800*(10
*a^5*b^2*c^2*d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a*b^6*c*d^
4 + a^2*b^5*d^5)*x^5 + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3*b^4*d^5)
*x^4 + 10*(10*a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^3 + 10*(10
*a^3*b^4*c^2*d^3 - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2 + 5*(10*a^4*b^3*c^2*d
^3 - 5*a^5*b^2*c*d^4 + a^6*b*d^5)*x)*log(b*x + a)^2 - 1800*(10*a^5*b^2*c^2*
d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a*b^6*c*d^4 + a^2*b^5*d
^5)*x^5 + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3*b^4*d^5)*x^4 + 10*(10
*a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^3 + 10*(10*a^3*b^4*c^2*
d^3 - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2 + 5*(10*a^4*b^3*c^2*d^3 - 5*a^5*b^
2*c*d^4 + a^6*b*d^5)*x)*log(d*x + c)^2 + 5*(925*a*b^6*c^5 - 9911*a^2*b^5*c^
4*d + 67900*a^3*b^4*c^3*d^2 - 71800*a^4*b^3*c^2*d^3 + 14375*a^5*b^2*c*d^4 -
 1489*a^6*b*d^5)*x + 60*(1100*a^5*b^2*c^2*d^3 - 325*a^6*b*c*d^4 + 47*a^7*d^
5 + (1100*b^7*c^2*d^3 - 325*a*b^6*c*d^4 + 47*a^2*b^5*d^5)*x^5 + 5*(1100*a*b
^6*c^2*d^3 - 325*a^2*b^5*c*d^4 + 47*a^3*b^4*d^5)*x^4 + 10*(1100*a^2*b^5*c^2
*d^3 - 325*a^3*b^4*c*d^4 + 47*a^4*b^3*d^5)*x^3 + 10*(1100*a^3*b^4*c^2*d^3 -
 325*a^4*b^3*c*d^4 + 47*a^5*b^2*d^5)*x^2 + 5*(1100*a^4*b^3*c^2*d^3 - 325*a^
5*b^2*c*d^4 + 47*a^6*b*d^5)*x)*log(b*x + a) - 60*(1100*a^5*b^2*c^2*d^3 - 32
5*a^6*b*c*d^4 + 47*a^7*d^5 + (1100*b^7*c^2*d^3 - 325*a*b^6*c*d^4 + 47*a^2*b
^5*d^5)*x^5 + 5*(1100*a*b^6*c^2*d^3 - 325*a^2*b^5*c*d^4 + 47*a^3*b^4*d^5)*x
^4 + 10*(1100*a^2*b^5*c^2*d^3 - 325*a^3*b^4*c*d^4 + 47*a^4*b^3*d^5)*x^3 + 1
0*(1100*a^3*b^4*c^2*d^3 - 325*a^4*b^3*c*d^4 + 47*a^5*b^2*d^5)*x^2 + 5*(1100
*a^4*b^3*c^2*d^3 - 325*a^5*b^2*c*d^4 + 47*a^6*b*d^5)*x - 60*(10*a^5*b^2*c^2
*d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a*b^6*c*d^4 + a^2*b^5*
d^5)*x^5 + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3*b^4*d^5)*x^4 + 10*(1
0*a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^3 + 10*(10*a^3*b^4*c^2
*d^3 - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2 + 5*(10*a^4*b^3*c^2*d^3 - 5*a^5*b
^2*c*d^4 + a^6*b*d^5)*x)*log(b*x + a))*log(d*x + c))/(a^5*b^8*c^5*g^6 - 5*a
^6*b^7*c^4*d*g^6 + 10*a^7*b^6*c^3*d^2*g^6 - 10*a^8*b^5*c^2*d^3*g^6 + 5*a^9*
b^4*c*d^4*g^6 - a^10*b^3*d^5*g^6 + (b^13*c^5*g^6 - 5*a*b^12*c^4*d*g^6 + 10*
a^2*b^11*c^3*d^2*g^6 - 10*a^3*b^10*c^2*d^3*g^6 + 5*a^4*b^9*c*d^4*g^6 - a^5*
b^8*d^5*g^6)*x^5 + 5*(a*b^12*c^5*g^6 - 5*a^2*b^11*c^4*d*g^6 + 10*a^3*b^10*c
^3*d^2*g^6 - 10*a^4*b^9*c^2*d^3*g^6 + 5*a^5*b^8*c*d^4*g^6 - a^6*b^7*d^5*g^6
)*x^4 + 10*(a^2*b^11*c^5*g^6 - 5*a^3*b^10*c^4*d*g^6 + 10*a^4*b^9*c^3*d^2*g^
6 - 10*a^5*b^8*c^2*d^3*g^6 + 5*a^6*b^7*c*d^4*g^6 - a^7*b^6*d^5*g^6)*x^3 + 1
0*(a^3*b^10*c^5*g^6 - 5*a^4*b^9*c^4*d*g^6 + 10*a^5*b^8*c^3*d^2*g^6 - 10*a^6
*b^7*c^2*d^3*g^6 + 5*a^7*b^6*c*d^4*g^6 - a^8*b^5*d^5*g^6)*x^2 + 5*(a^4*b^9*
c^5*g^6 - 5*a^5*b^8*c^4*d*g^6 + 10*a^6*b^7*c^3*d^2*g^6 - 10*a^7*b^6*c^2*d^3
*g^6 + 5*a^8*b^5*c*d^4*g^6 - a^9*b^4*d^5*g^6)*x))*B^2*d^2*i^2 - 1/900*A*B*d
^2*i^2*(60*(10*b^2*x^2 + 5*a*b*x + a^2)*log(b*e*x/(d*x + c) + a*e/(d*x + c)
)/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2
+ 5*a^4*b^4*g^6*x + a^5*b^3*g^6) + (47*a^2*b^4*c^4 - 278*a^3*b^3*c^3*d + 82
2*a^4*b^2*c^2*d^2 - 278*a^5*b*c*d^3 + 47*a^6*d^4 + 60*(10*b^6*c^2*d^2 - 5*a
*b^5*c*d^3 + a^2*b^4*d^4)*x^4 - 30*(10*b^6*c^3*d - 95*a*b^5*c^2*d^2 + 46*a^
2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^3 + 10*(20*b^6*c^4 - 140*a*b^5*c^3*d + 537*a
^2*b^4*c^2*d^2 - 248*a^3*b^3*c*d^3 + 47*a^4*b^2*d^4)*x^2 + 5*(35*a*b^5*c^4
- 218*a^2*b^4*c^3*d + 702*a^3*b^3*c^2*d^2 - 278*a^4*b^2*c*d^3 + 47*a^5*b*d^
4)*x)/((b^12*c^4 - 4*a*b^11*c^3*d + 6*a^2*b^10*c^2*d^2 - 4*a^3*b^9*c*d^3 +
a^4*b^8*d^4)*g^6*x^5 + 5*(a*b^11*c^4 - 4*a^2*b^10*c^3*d + 6*a^3*b^9*c^2*d^2
 - 4*a^4*b^8*c*d^3 + a^5*b^7*d^4)*g^6*x^4 + 10*(a^2*b^10*c^4 - 4*a^3*b^9*c^
3*d + 6*a^4*b^8*c^2*d^2 - 4*a^5*b^7*c*d^3 + a^6*b^6*d^4)*g^6*x^3 + 10*(a^3*
b^9*c^4 - 4*a^4*b^8*c^3*d + 6*a^5*b^7*c^2*d^2 - 4*a^6*b^6*c*d^3 + a^7*b^5*d
^4)*g^6*x^2 + 5*(a^4*b^8*c^4 - 4*a^5*b^7*c^3*d + 6*a^6*b^6*c^2*d^2 - 4*a^7*
b^5*c*d^3 + a^8*b^4*d^4)*g^6*x + (a^5*b^7*c^4 - 4*a^6*b^6*c^3*d + 6*a^7*b^5
*c^2*d^2 - 4*a^8*b^4*c*d^3 + a^9*b^3*d^4)*g^6) + 60*(10*b^2*c^2*d^3 - 5*a*b
*c*d^4 + a^2*d^5)*log(b*x + a)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d
```

```
^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6) - 60*(10*b^2*
c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(d*x + c)/((b^8*c^5 - 5*a*b^7*c^4*d + 1
0*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6
)) - 1/300*A*B*c*d*i^2*(60*(5*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))
/(b^7*g^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 +
 5*a^4*b^3*g^6*x + a^5*b^2*g^6) + (27*a*b^4*c^4 - 148*a^2*b^3*c^3*d + 352*a
^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d^4 - 60*(5*b^5*c*d^3 - a*b^4*d^4
)*x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^2*b^3*d^4)*x^3 - 10*(10*b^
5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*d^3 - 47*a^3*b^2*d^4)*x^2 + 5*(1
5*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^2*d^2 - 428*a^3*b^2*c*d^3 + 77*a
^4*b*d^4)*x)/((b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2*b^9*c^2*d^2 - 4*a^3*b^8*c*
d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a^2*b^9*c^3*d + 6*a^3*b^8*c^
2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*x^4 + 10*(a^2*b^9*c^4 - 4*a^3*b^
8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a^6*b^5*d^4)*g^6*x^3 + 10*(
a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 - 4*a^6*b^5*c*d^3 + a^7*b
^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d + 6*a^6*b^5*c^2*d^2 - 4*
a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4 - 4*a^6*b^5*c^3*d + 6*a^7
*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6) - 60*(5*b*c*d^4 - a*d^5)
*log(b*x + a)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c
^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4 - a*d^5)*log(d
*x + c)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3
 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6)) - 1/150*A*B*c^2*i^2*((60*b^4*d^4*x^
4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2 - 163*a^3*b*c*d^3 + 1
37*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 - 13*a*b^
3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a*b^3*c^2*d^2 + 43*a^2*
b^2*c*d^3 - 77*a^3*b*d^4)*x)/((b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*d^2
 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c^4 - 4*a^2*b^8*c^3*d
+ 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g^6*x^4 + 10*(a^2*b^8*
c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6*b^4*d^4)*
g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4
*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*b^
4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*g^6*x + (a^5*b^5*c^4 - 4*a^6*b^4
*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d^4)*g^6) + 60*log(b*e
*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g
^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6) + 60*d^5*log(b*x
 + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 +
 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) - 60*d^5*log(d*x + c)/((b^6*c^5 - 5*a*b^
5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b
*d^5)*g^6)) - 1/5*B^2*c^2*i^2*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^6*g
^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*
b^2*g^6*x + a^5*b*g^6) - 1/10*(5*b*x + a)*A^2*c*d*i^2/(b^7*g^6*x^5 + 5*a*b^
6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x + a^5
*b^2*g^6) - 1/30*(10*b^2*x^2 + 5*a*b*x + a^2)*A^2*d^2*i^2/(b^8*g^6*x^5 + 5*
a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x +
 a^5*b^3*g^6) - 1/5*A^2*c^2*i^2/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4
*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6)
```

mupad [B] time = 12.77, size = 3434, normalized size = 7.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
6,x)
```

```
[Out] ((1800*A^2*a^4*d^4*i^2 + 10800*A^2*b^4*c^4*i^2 + 1489*B^2*a^4*d^4*i^2 + 864
*B^2*b^4*c^4*i^2 + 2820*A*B*a^4*d^4*i^2 + 4320*A*B*b^4*c^4*i^2 - 16200*A^2*
a*b^3*c^3*d*i^2 + 1800*A^2*a^3*b*c*d^3*i^2 - 2511*B^2*a*b^3*c^3*d*i^2 + 148
9*B^2*a^3*b*c*d^3*i^2 + 1800*A^2*a^2*b^2*c^2*d^2*i^2 + 1489*B^2*a^2*b^2*c^2
*d^2*i^2 + 2820*A*B*a^2*b^2*c^2*d^2*i^2 - 9180*A*B*a*b^3*c^3*d*i^2 + 2820*A
```

```
*B*a^3*b*c*d^3*i^2)/(60*(a*d - b*c)) + (x^3*(363*B^2*a*b^3*d^4*i^2 + 13*B^2
*b^4*c*d^3*i^2 + 540*A*B*a*b^3*d^4*i^2 - 60*A*B*b^4*c*d^3*i^2))/(2*(a*d - b
*c)) + (x*(1800*A^2*a^3*b*d^4*i^2 + 1489*B^2*a^3*b*d^4*i^2 + 5400*A^2*b^4*c
^3*d*i^2 + 189*B^2*b^4*c^3*d*i^2 - 9000*A^2*a*b^3*c^2*d^2*i^2 + 1800*A^2*a^
2*b^2*c*d^3*i^2 - 911*B^2*a*b^3*c^2*d^2*i^2 + 1489*B^2*a^2*b^2*c*d^3*i^2 +
2820*A*B*a^3*b*d^4*i^2 + 1620*A*B*b^4*c^3*d*i^2 - 4380*A*B*a*b^3*c^2*d^2*i^
2 + 2820*A*B*a^2*b^2*c*d^3*i^2))/(12*(a*d - b*c)) + (x^2*(1800*A^2*a^2*b^2*
d^4*i^2 + 1489*B^2*a^2*b^2*d^4*i^2 + 1800*A^2*b^4*c^2*d^2*i^2 - 86*B^2*b^4*
c^2*d^2*i^2 - 3600*A^2*a*b^3*c*d^3*i^2 + 289*B^2*a*b^3*c*d^3*i^2 + 2820*A*B
*a^2*b^2*d^4*i^2 + 120*A*B*b^4*c^2*d^2*i^2 - 780*A*B*a*b^3*c*d^3*i^2))/(6*(
a*d - b*c)) + (d*x^4*(47*B^2*b^4*d^3*i^2 + 60*A*B*b^4*d^3*i^2))/(a*d - b*c)
)/(x*(4500*a^4*b^5*c*g^6 - 4500*a^5*b^4*d*g^6) - x^4*(4500*a^2*b^7*d*g^6 -
4500*a*b^8*c*g^6) + x^5*(900*b^9*c*g^6 - 900*a*b^8*d*g^6) + x^2*(9000*a^3*b
^6*c*g^6 - 9000*a^4*b^5*d*g^6) + x^3*(9000*a^2*b^7*c*g^6 - 9000*a^3*b^6*d*g
^6) + 900*a^5*b^4*c*g^6 - 900*a^6*b^3*d*g^6) - log((e*(a + b*x))/(c + d*x))
^2*((x*(b*((B^2*c*d*i^2)/(10*b^3*g^6) + (B^2*a*d^2*i^2)/(30*b^4*g^6)) + (2*
B^2*c*d*i^2)/(5*b^2*g^6) + (2*B^2*a*d^2*i^2)/(15*b^3*g^6)) + a*((B^2*c*d*i^
2)/(10*b^3*g^6) + (B^2*a*d^2*i^2)/(30*b^4*g^6)) + (B^2*c^2*i^2)/(5*b^2*g^6)
 + (B^2*d^2*i^2*x^2)/(3*b^2*g^6))/(5*a^4*x + a^5/b + b^4*x^5 + 10*a^3*b*x^2
 + 5*a*b^3*x^4 + 10*a^2*b^2*x^3) - (B^2*d^5*i^2)/(30*b^3*g^6*(a^3*d^3 - b^3
*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) - (log((e*(a + b*x))/(c + d*x))*(a*
((B*i^2*(6*A*b*c - B*a*d + B*b*c))/(30*b^4*g^6) + (A*B*a*d*i^2)/(15*b^4*g^6
)) + x*(b*((B*i^2*(6*A*b*c - B*a*d + B*b*c))/(30*b^4*g^6) + (A*B*a*d*i^2)/(
15*b^4*g^6)) + (2*B*i^2*(6*A*b*c - B*a*d + B*b*c))/(15*b^3*g^6) + (B^2*d^5*
i^2*((10*a^4*d^4 + b^4*c^4 + 15*a^2*b^2*c^2*d^2 - 6*a*b^3*c^3*d - 20*a^3*b*
c*d^3)/(5*d^5) + b*(a*(a*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(20*b*d^3) + (a
*(a*d - b*c))/(5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b
*c*d^2)/(30*b*d^4)) + (10*a^4*d^4 + b^4*c^4 + 15*a^2*b^2*c^2*d^2 - 6*a*b^3*
c^3*d - 20*a^3*b*c*d^3)/(20*b*d^5)) + a*(b*(a*((5*a^2*d^2 + b^2*c^2 - 6*a*b
*c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a
*b^2*c^2*d - 15*a^2*b*c*d^2)/(30*b*d^4)) + a*(b*((5*a^2*d^2 + b^2*c^2 - 6*a
*b*c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - 6*
a*b*c*d)/(10*d^3) + (2*a*(a*d - b*c))/(5*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*
a*b^2*c^2*d - 15*a^2*b*c*d^2)/(10*d^4))))/(15*b^3*g^6*(a^3*d^3 - b^3*c^3 +
3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (4*A*B*a*d*i^2)/(15*b^3*g^6)) + x^2*((2*A
*B*d*i^2)/(3*b^2*g^6) + (B^2*d^5*i^2*(a*(b*(b*((5*a^2*d^2 + b^2*c^2 - 6*a*b
*c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - 6*a*
b*c*d)/(10*d^3) + (2*a*(a*d - b*c))/(5*d^2)) - a*((b^2*c - a*b*d)/(5*d^2) -
 (2*b*(a*d - b*c))/(5*d^2)) + (3*(b^3*c^2 + 5*a^2*b*d^2 - 6*a*b^2*c*d))/(20
*d^3)) - (b^4*c^3 - 10*a^3*b*d^3 + 15*a^2*b^2*c*d^2 - 6*a*b^3*c^2*d)/(5*d^4
) + b*(b*(a*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c))
/(5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2)/(30*b
*d^4)) + a*(b*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c
))/(5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(10*d^3) + (2*a*(a*d - b*
c))/(5*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2)/(10*
d^4))))/(15*b^3*g^6*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) +
 (B*i^2*(6*A*b^2*c^2 - B*a^2*d^2 + B*b^2*c^2))/(15*b^4*d*g^6) + (B^2*d^5*i^
2*(a*(a*(a*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c))/
(5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2)/(30*b*
d^4)) + (10*a^4*d^4 + b^4*c^4 + 15*a^2*b^2*c^2*d^2 - 6*a*b^3*c^3*d - 20*a^3
*b*c*d^3)/(20*b*d^5)) + (5*a^5*d^5 - b^5*c^5 - 15*a^2*b^3*c^3*d^2 + 20*a^3*
b^2*c^2*d^3 + 6*a*b^4*c^4*d - 15*a^4*b*c*d^4)/(5*b*d^6)))/(15*b^3*g^6*(a^3*
d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (B^2*d^5*i^2*x^3*((b^4*c^
2 + 5*a^2*b^2*d^2 - 6*a*b^3*c*d)/(5*d^3) + b*(b*(b*((5*a^2*d^2 + b^2*c^2 -
6*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 -
 6*a*b*c*d)/(10*d^3) + (2*a*(a*d - b*c))/(5*d^2)) - a*((b^2*c - a*b*d)/(5*d
^2) - (2*b*(a*d - b*c))/(5*d^2)) + (3*(b^3*c^2 + 5*a^2*b*d^2 - 6*a*b^2*c*d)
)/(20*d^3)) - a*(b*((b^2*c - a*b*d)/(5*d^2) - (2*b*(a*d - b*c))/(5*d^2)) +
(b^3*c - a*b^2*d)/(5*d^2))))/(15*b^3*g^6*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d
```

```
 - 3*a^2*b*c*d^2)) - (B^2*d^5*i^2*x^4*(b*(b*((b^2*c - a*b*d)/(5*d^2) - (2*b
*(a*d - b*c))/(5*d^2)) + (b^3*c - a*b^2*d)/(5*d^2)) + (b^4*c - a*b^3*d)/(5*
d^2)))/(15*b^3*g^6*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))))/(
(5*a^4*x)/d + a^5/(b*d) + (b^4*x^5)/d + (10*a^3*b*x^2)/d + (5*a*b^3*x^4)/d
+ (10*a^2*b^2*x^3)/d) - (B*d^5*i^2*atan((B*d^5*i^2*(60*A + 47*B)*(900*b^6*c
^3*g^6 + 900*a^3*b^3*d^3*g^6 - 900*a*b^5*c^2*d*g^6 - 900*a^2*b^4*c*d^2*g^6)
*1i)/(900*b^3*g^6*(47*B^2*d^5*i^2 + 60*A*B*d^5*i^2)*(a*d - b*c)^3) + (B*d^6
*i^2*x*(60*A + 47*B)*(b^5*c^2*g^6 + a^2*b^3*d^2*g^6 - 2*a*b^4*c*d*g^6)*2i)/
(b^2*g^6*(47*B^2*d^5*i^2 + 60*A*B*d^5*i^2)*(a*d - b*c)^3))*(60*A + 47*B)*1i
)/(450*b^3*g^6*(a*d - b*c)^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**6,x)

[Out] Timed out
```

3.74 $\int (ag+bgx)^3(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx$

Optimal. Leaf size=1089

$$-\frac{B^2g^3i^3\log\left(\frac{a+bx}{c+dx}\right)(bc-ad)^7}{210b^4d^4}-\frac{Bg^3i^3\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(6A+11B+6B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)(bc-ad)^7}{420b^4d^4}-\frac{11B^2g^3i^3\log(c+dx)}{420b^4d^4}$$

```
[Out] 5/84*B^2*(-a*d+b*c)^6*g^3*i^3*x/b^3/d^3+1/140*B^2*(-a*d+b*c)^3*g^3*i^3*(b*x
+a)^4/b^4-29/840*B^2*(-a*d+b*c)^5*g^3*i^3*(d*x+c)^2/b^2/d^4+47/1260*B^2*(-a
*d+b*c)^4*g^3*i^3*(d*x+c)^3/b/d^4-13/420*B^2*(-a*d+b*c)^3*g^3*i^3*(d*x+c)^4
/d^4+1/105*b*B^2*(-a*d+b*c)^2*g^3*i^3*(d*x+c)^5/d^4-1/210*B^2*(-a*d+b*c)^7*
g^3*i^3*ln((b*x+a)/(d*x+c))/b^4/d^4-1/210*B*(-a*d+b*c)^4*g^3*i^3*(b*x+a)^3*
(A+B*ln(e*(b*x+a)/(d*x+c)))/b^4/d-3/140*B*(-a*d+b*c)^3*g^3*i^3*(b*x+a)^4*(A
+B*ln(e*(b*x+a)/(d*x+c)))/b^4-1/35*B*(-a*d+b*c)^2*g^3*i^3*(b*x+a)^4*(d*x+c)
*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^3+2/21*B*(-a*d+b*c)^4*g^3*i^3*(d*x+c)^3*(A+B
*ln(e*(b*x+a)/(d*x+c)))/b/d^4-3/14*B*(-a*d+b*c)^3*g^3*i^3*(d*x+c)^4*(A+B*ln
(e*(b*x+a)/(d*x+c)))/d^4+6/35*b*B*(-a*d+b*c)^2*g^3*i^3*(d*x+c)^5*(A+B*ln(e*
(b*x+a)/(d*x+c)))/d^4-1/21*b^2*B*(-a*d+b*c)*g^3*i^3*(d*x+c)^6*(A+B*ln(e*(b*
x+a)/(d*x+c)))/d^4+1/140*(-a*d+b*c)^3*g^3*i^3*(b*x+a)^4*(A+B*ln(e*(b*x+a)/(
d*x+c)))^2/b^4+1/35*(-a*d+b*c)^2*g^3*i^3*(b*x+a)^4*(d*x+c)*(A+B*ln(e*(b*x+a
)/(d*x+c)))^2/b^3+1/14*(-a*d+b*c)*g^3*i^3*(b*x+a)^4*(d*x+c)^2*(A+B*ln(e*(b*
x+a)/(d*x+c)))^2/b^2+1/7*g^3*i^3*(b*x+a)^4*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x
+c)))^2/b+1/420*B*(-a*d+b*c)^5*g^3*i^3*(b*x+a)^2*(3*A+B+3*B*ln(e*(b*x+a)/(d
*x+c)))/b^4/d^2-1/420*B*(-a*d+b*c)^6*g^3*i^3*(b*x+a)*(6*A+5*B+6*B*ln(e*(b*x
+a)/(d*x+c)))/b^4/d^3-1/420*B*(-a*d+b*c)^7*g^3*i^3*ln((-a*d+b*c)/b/(d*x+c))
*(6*A+11*B+6*B*ln(e*(b*x+a)/(d*x+c)))/b^4/d^4-11/420*B^2*(-a*d+b*c)^7*g^3*i
^3*ln(d*x+c)/b^4/d^4-1/70*B^2*(-a*d+b*c)^7*g^3*i^3*polylog(2,d*(b*x+a)/b/(d
*x+c))/b^4/d^4
```

Rubi [A] time = 4.27, antiderivative size = 896, normalized size of antiderivative = 0.82, number of steps used = 122, number of rules used = 13, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.310$, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^3i^3\log^2(c+dx)(bc-ad)^7}{140b^4d^4}-\frac{B^2g^3i^3\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(c+dx)(bc-ad)^7}{70b^4d^4}+\frac{Bg^3i^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(c+d}{70b^4d^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,
x]
```

```
[Out] -(A*B*(b*c - a*d)^6*g^3*i^3*x)/(70*b^3*d^3) + (B^2*(b*c - a*d)^6*g^3*i^3*x)
/(70*b^3*d^3) - (3*B^2*(b*c - a*d)^5*g^3*i^3*(a + b*x)^2)/(280*b^4*d^2) + (
11*B^2*(b*c - a*d)^4*g^3*i^3*(a + b*x)^3)/(1260*b^4*d) + (B^2*(b*c - a*d)^3
*g^3*i^3*(a + b*x)^4)/(42*b^4) + (B^2*d*(b*c - a*d)^2*g^3*i^3*(a + b*x)^5)/
(105*b^4) - (B^2*(b*c - a*d)^6*g^3*i^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x
)])/(70*b^4*d^3) + (B*(b*c - a*d)^5*g^3*i^3*(a + b*x)^2*(A + B*Log[(e*(a +
b*x))/(c + d*x)]))/(140*b^4*d^2) - (B*(b*c - a*d)^4*g^3*i^3*(a + b*x)^3*(A
+ B*Log[(e*(a + b*x))/(c + d*x)]))/(210*b^4*d) - (17*B*(b*c - a*d)^3*g^3*i^
3*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(140*b^4) - (B*d*(b*c -
 a*d)^2*g^3*i^3*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(7*b^4) -
 (B*d^2*(b*c - a*d)*g^3*i^3*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)]
))/(21*b^4) + ((b*c - a*d)^3*g^3*i^3*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(
c + d*x)])^2)/(4*b^4) + (3*d*(b*c - a*d)^2*g^3*i^3*(a + b*x)^5*(A + B*Log[(
e*(a + b*x))/(c + d*x)])^2)/(5*b^4) + (d^2*(b*c - a*d)*g^3*i^3*(a + b*x)^6*
(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*b^4) + (d^3*g^3*i^3*(a + b*x)^7*
```

```
(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(7*b^4) - (B^2*(b*c - a*d)^7*g^3*i^
3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(70*b^4*d^4) + (B*(b*c -
a*d)^7*g^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(70*b^4*d
^4) + (B^2*(b*c - a*d)^7*g^3*i^3*Log[c + d*x]^2)/(140*b^4*d^4) - (B^2*(b*c
- a*d)^7*g^3*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(70*b^4*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
```

```
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (74c+74dx)^3(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx = \int \left(\frac{(-bc+ad)^3g^3(74c+74dx)^3\left(A+B\log\left(\frac{e(a+b\cdots}{c+d\cdots}\right.\right.}{d^3}\right.$$

$$= \frac{(b^3g^3)\int (74c+74dx)^6\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx}{405224d^3}$$

$$= -\frac{101306(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{d^4}$$

$$= -\frac{101306(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{d^4}$$

$$= -\frac{101306(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{d^4}$$

$$= -\frac{101306(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{d^4}$$

$$= \frac{202612AB(bc-ad)^6g^3x}{35b^3d^3} + \frac{101306B(bc-ad)^5g^3(\cdots}{\cdots}$$

$$= \frac{202612AB(bc-ad)^6g^3x}{35b^3d^3} + \frac{202612B^2(bc-ad)^6g^3\cdots}{35b^4\cdots}$$

$$= \frac{202612AB(bc-ad)^6g^3x}{35b^3d^3} + \frac{202612B^2(bc-ad)^6g^3\cdots}{35b^4\cdots}$$

$$= \frac{202612AB(bc-ad)^6g^3x}{35b^3d^3} + \frac{202612B^2(bc-ad)^6g^3\cdots}{35b^3d^3}$$

$$= \frac{202612AB(bc-ad)^6g^3x}{35b^3d^3} + \frac{202612B^2(bc-ad)^6g^3\cdots}{35b^3d^3}$$

$$= \frac{202612AB(bc-ad)^6g^3x}{35b^3d^3} + \frac{202612B^2(bc-ad)^6g^3\cdots}{35b^3d^3}$$

$$= \frac{202612AB(bc-ad)^6g^3x}{35b^3d^3} + \frac{202612B^2(bc-ad)^6g^3\cdots}{35b^3d^3}$$

Mathematica [B] time = 3.60, size = 2330, normalized size = 2.14

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x
)])^2,x]
```

```
[Out] (g^3*i^3*(35*(b*c - a*d)^3*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])
^2 + 84*d*(b*c - a*d)^2*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2
+ 70*d^2*(b*c - a*d)*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 2
```

```
0*d^3*(a + b*x)^7*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (35*B*(b*c - a*d
)^4*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*
x))/(c + d*x)] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/
(c + d*x)]) + 2*d^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*
(b*c - a*d)^3*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[(e*(a + b*x))/(c +
d*x)])*Log[c + d*x] + B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2
- 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*(b*d*x + (-(b*c) + a*d)
*Log[c + d*x]) + 3*B*(b*c - a*d)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] -
Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(3*
d^4) + (7*B*(b*c - a*d)^3*(24*A*b*d*(b*c - a*d)^3*x + 24*B*d*(b*c - a*d)^3*
(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - 12*d^2*(b*c - a*d)^2*(a + b*x)^2*(
A + B*Log[(e*(a + b*x))/(c + d*x)]) + 8*d^3*(b*c - a*d)*(a + b*x)^3*(A + B*
Log[(e*(a + b*x))/(c + d*x)]) - 6*d^4*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/
(c + d*x)]) - 24*B*(b*c - a*d)^4*Log[c + d*x] - 24*(b*c - a*d)^4*(A + B*Log
[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a
*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + B*(b*c - a*d)*(6*
b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3
- 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^3*(b*d*x + (-(b*c) + a*d
)*Log[c + d*x]) + 12*B*(b*c - a*d)^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)]
- Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d
^4 - (7*B*(b*c - a*d)^2*(24*b^2*B*c*d*(b*c - a*d)^3*x + 120*A*b*d*(b*c - a*
d)^4*x + 130*b*B*d*(b*c - a*d)^4*x + 24*a*b*B*d^2*(-(b*c) + a*d)^3*x - 12*b
*B*c*d^2*(b*c - a*d)^2*(a + b*x)^2 + 12*a*B*d^3*(b*c - a*d)^2*(a + b*x)^2 +
 35*B*d^2*(-(b*c) + a*d)^3*(a + b*x)^2 + 8*b*B*c*d^3*(b*c - a*d)*(a + b*x)^
3 + 10*B*d^3*(b*c - a*d)^2*(a + b*x)^3 + 8*a*B*d^4*(-(b*c) + a*d)*(a + b*x)
^3 - 6*b*B*c*d^4*(a + b*x)^4 + 6*a*B*d^5*(a + b*x)^4 + 120*B*d*(b*c - a*d)^
4*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 60*d^2*(-(b*c) + a*d)^3*(a + b*x
)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 40*d^3*(b*c - a*d)^2*(a + b*x)^3
*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 30*d^4*(-(b*c) + a*d)*(a + b*x)^4*(
A + B*Log[(e*(a + b*x))/(c + d*x)]) + 24*d^5*(a + b*x)^5*(A + B*Log[(e*(a +
 b*x))/(c + d*x)]) - 24*b*B*c*(b*c - a*d)^4*Log[c + d*x] + 24*a*B*d*(b*c -
a*d)^4*Log[c + d*x] - 250*B*(b*c - a*d)^5*Log[c + d*x] - 120*(b*c - a*d)^5*
(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 60*B*(b*c - a*d)^5*((2*
Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[
2, (b*(c + d*x))/(b*c - a*d)])))/(6*d^4) + (B*(b*c - a*d)*(60*b^2*B*c*d*(b*
c - a*d)^4*x - 60*a*b*B*d^2*(b*c - a*d)^4*x + 360*A*b*d*(b*c - a*d)^5*x + 4
62*b*B*d*(b*c - a*d)^5*x - 30*b*B*c*d^2*(b*c - a*d)^3*(a + b*x)^2 + 30*a*B*
d^3*(b*c - a*d)^3*(a + b*x)^2 - 141*B*d^2*(b*c - a*d)^4*(a + b*x)^2 + 20*b*
B*c*d^3*(b*c - a*d)^2*(a + b*x)^3 - 20*a*B*d^4*(b*c - a*d)^2*(a + b*x)^3 +
54*B*d^3*(b*c - a*d)^3*(a + b*x)^3 - 15*b*B*c*d^4*(b*c - a*d)*(a + b*x)^4 +
 15*a*B*d^5*(b*c - a*d)*(a + b*x)^4 - 18*B*d^4*(b*c - a*d)^2*(a + b*x)^4 +
12*b*B*c*d^5*(a + b*x)^5 - 12*a*B*d^6*(a + b*x)^5 + 360*B*d*(b*c - a*d)^5*(
a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - 180*d^2*(b*c - a*d)^4*(a + b*x)^2*(
A + B*Log[(e*(a + b*x))/(c + d*x)]) + 120*d^3*(b*c - a*d)^3*(a + b*x)^3*(A
+ B*Log[(e*(a + b*x))/(c + d*x)]) - 90*d^4*(b*c - a*d)^2*(a + b*x)^4*(A + B
*Log[(e*(a + b*x))/(c + d*x)]) + 72*d^5*(b*c - a*d)*(a + b*x)^5*(A + B*Log[
(e*(a + b*x))/(c + d*x)]) - 60*d^6*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(c
+ d*x)]) - 60*b*B*c*(b*c - a*d)^5*Log[c + d*x] + 60*a*B*d*(b*c - a*d)^5*Log
[c + d*x] - 822*B*(b*c - a*d)^6*Log[c + d*x] - 360*(b*c - a*d)^6*(A + B*Log
[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] + 180*B*(b*c - a*d)^6*((2*Log[(d*(a
 + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c
+ d*x))/(b*c - a*d)])))/(9*d^4)))/(140*b^4)
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2b^3d^3g^3i^3x^6 + A^2a^3c^3g^3i^3 + 3\left(A^2b^3cd^2 + A^2ab^2d^3\right)g^3i^3x^5 + 3\left(A^2b^3c^2d + 3A^2ab^2cd^2 + A^2a^2bd^3\right)g^3i\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="fricas")
```

```
[Out] integral(A^2*b^3*d^3*g^3*i^3*x^6 + A^2*a^3*c^3*g^3*i^3 + 3*(A^2*b^3*c*d^2 +
 A^2*a*b^2*d^3)*g^3*i^3*x^5 + 3*(A^2*b^3*c^2*d + 3*A^2*a*b^2*c*d^2 + A^2*a^
2*b*d^3)*g^3*i^3*x^4 + (A^2*b^3*c^3 + 9*A^2*a*b^2*c^2*d + 9*A^2*a^2*b*c*d^2
 + A^2*a^3*d^3)*g^3*i^3*x^3 + 3*(A^2*a*b^2*c^3 + 3*A^2*a^2*b*c^2*d + A^2*a^
3*c*d^2)*g^3*i^3*x^2 + 3*(A^2*a^2*b*c^3 + A^2*a^3*c^2*d)*g^3*i^3*x + (B^2*b
^3*d^3*g^3*i^3*x^6 + B^2*a^3*c^3*g^3*i^3 + 3*(B^2*b^3*c*d^2 + B^2*a*b^2*d^3
)*g^3*i^3*x^5 + 3*(B^2*b^3*c^2*d + 3*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*g^3*i
^3*x^4 + (B^2*b^3*c^3 + 9*B^2*a*b^2*c^2*d + 9*B^2*a^2*b*c*d^2 + B^2*a^3*d^3
)*g^3*i^3*x^3 + 3*(B^2*a*b^2*c^3 + 3*B^2*a^2*b*c^2*d + B^2*a^3*c*d^2)*g^3*i
^3*x^2 + 3*(B^2*a^2*b*c^3 + B^2*a^3*c^2*d)*g^3*i^3*x)*log((b*e*x + a*e)/(d*
x + c))^2 + 2*(A*B*b^3*d^3*g^3*i^3*x^6 + A*B*a^3*c^3*g^3*i^3 + 3*(A*B*b^3*c
*d^2 + A*B*a*b^2*d^3)*g^3*i^3*x^5 + 3*(A*B*b^3*c^2*d + 3*A*B*a*b^2*c*d^2 +
A*B*a^2*b*d^3)*g^3*i^3*x^4 + (A*B*b^3*c^3 + 9*A*B*a*b^2*c^2*d + 9*A*B*a^2*b
*c*d^2 + A*B*a^3*d^3)*g^3*i^3*x^3 + 3*(A*B*a*b^2*c^3 + 3*A*B*a^2*b*c^2*d +
A*B*a^3*c*d^2)*g^3*i^3*x^2 + 3*(A*B*a^2*b*c^3 + A*B*a^3*c^2*d)*g^3*i^3*x)*l
og((b*e*x + a*e)/(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.03, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{3} \left(dix+ci\right)^{3} \left(B\ln\left(\frac{\left(bx+a\right)e}{dx+c}\right)+A\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 3.44, size = 6921, normalized size = 6.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="maxima")
```

```
[Out] 1/7*A^2*b^3*d^3*g^3*i^3*x^7 + 1/2*A^2*b^3*c*d^2*g^3*i^3*x^6 + 1/2*A^2*a*b^2
*d^3*g^3*i^3*x^6 + 3/5*A^2*b^3*c^2*d*g^3*i^3*x^5 + 9/5*A^2*a*b^2*c*d^2*g^3*
i^3*x^5 + 3/5*A^2*a^2*b*d^3*g^3*i^3*x^5 + 1/4*A^2*b^3*c^3*g^3*i^3*x^4 + 9/4
*A^2*a*b^2*c^2*d*g^3*i^3*x^4 + 9/4*A^2*a^2*b*c*d^2*g^3*i^3*x^4 + 1/4*A^2*a^
3*d^3*g^3*i^3*x^4 + A^2*a*b^2*c^3*g^3*i^3*x^3 + 3*A^2*a^2*b*c^2*d*g^3*i^3*x
^3 + A^2*a^3*c*d^2*g^3*i^3*x^3 + 3/2*A^2*a^2*b*c^3*g^3*i^3*x^2 + 3/2*A^2*a^
3*c^2*d*g^3*i^3*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + a*log(b*x
 + a)/b - c*log(d*x + c)/d)*A*B*a^3*c^3*g^3*i^3 + 3*(x^2*log(b*e*x/(d*x + c
) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a
*d)*x/(b*d))*A*B*a^2*b*c^3*g^3*i^3 + (2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x
+ c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d
```

```
^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*b^2*c^3*g^3*i^3 + 1/12*
(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^
4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*
d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*b^3*c^3*g^3*i^3 + 3*(x^2
*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x
+ c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a^3*c^2*d*g^3*i^3 + 3*(2*x^3*log(b*e*x/
(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^
3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a^2*
b*c^2*d*g^3*i^3 + 3/4*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*l
og(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 -
 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*a*
b^2*c^2*d*g^3*i^3 + 1/10*(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*
a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)
*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 -
12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*A*B*b^3*c^2*d*g^3*i^3 + (2*x^3*log(b*e
*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)
/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a
^3*c*d^2*g^3*i^3 + 3/4*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*
log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3
- 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*a
^2*b*c*d^2*g^3*i^3 + 3/10*(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 12
*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4
)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 -
 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*A*B*a*b^2*c*d^2*g^3*i^3 + 1/60*(60*x^
6*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 60*a^6*log(b*x + a)/b^6 + 60*c^6*l
og(d*x + c)/d^6 - (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b
^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^
5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5))*A*B*b^3*c*d^2*g^3*i^3 + 1/12*
(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^
4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*
d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*a^3*d^3*g^3*i^3 + 1/10*(
12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*
c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^
2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/
(b^4*d^4))*A*B*a^2*b*d^3*g^3*i^3 + 1/60*(60*x^6*log(b*e*x/(d*x + c) + a*e/(
d*x + c)) - 60*a^6*log(b*x + a)/b^6 + 60*c^6*log(d*x + c)/d^6 - (12*(b^5*c*
d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2
 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^
5)*x)/(b^5*d^5))*A*B*a*b^2*d^3*g^3*i^3 + 1/210*(60*x^7*log(b*e*x/(d*x + c)
+ a*e/(d*x + c)) + 60*a^7*log(b*x + a)/b^7 - 60*c^7*log(d*x + c)/d^7 - (10*
(b^6*c*d^5 - a*b^5*d^6)*x^6 - 12*(b^6*c^2*d^4 - a^2*b^4*d^6)*x^5 + 15*(b^6*
c^3*d^3 - a^3*b^3*d^6)*x^4 - 20*(b^6*c^4*d^2 - a^4*b^2*d^6)*x^3 + 30*(b^6*c
^5*d - a^5*b*d^6)*x^2 - 60*(b^6*c^6 - a^6*d^6)*x)/(b^6*d^6))*A*B*b^3*d^3*g^
3*i^3 + A^2*a^3*c^3*g^3*i^3*x + 1/420*(6*b^6*c^7*g^3*i^3*log(e) - 107*a^4*b
^2*c^3*d^4*g^3*i^3 + 39*a^5*b*c^2*d^5*g^3*i^3 - 6*a^6*c*d^6*g^3*i^3 - 6*(7*
g^3*i^3*log(e) - g^3*i^3)*a*b^5*c^6*d + 3*(42*g^3*i^3*log(e) - 13*g^3*i^3)*
a^2*b^4*c^5*d^2 - (210*g^3*i^3*log(e) - 107*g^3*i^3)*a^3*b^3*c^4*d^3)*B^2*l
og(d*x + c)/(b^3*d^4) + 1/70*(b^7*c^7*g^3*i^3 - 7*a*b^6*c^6*d*g^3*i^3 + 21*
a^2*b^5*c^5*d^2*g^3*i^3 - 35*a^3*b^4*c^4*d^3*g^3*i^3 + 35*a^4*b^3*c^3*d^4*g
^3*i^3 - 21*a^5*b^2*c^2*d^5*g^3*i^3 + 7*a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i
^3)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)
/(b*c - a*d)))*B^2/(b^4*d^4) + 1/2520*(360*B^2*b^7*d^7*g^3*i^3*x^7*log(e)^2
 + 60*((21*g^3*i^3*log(e)^2 - 2*g^3*i^3*log(e))*b^7*c*d^6 + (21*g^3*i^3*log
(e)^2 + 2*g^3*i^3*log(e))*a*b^6*d^7)*B^2*x^6 + 24*((63*g^3*i^3*log(e)^2 - 1
5*g^3*i^3*log(e) + g^3*i^3)*b^7*c^2*d^5 + (189*g^3*i^3*log(e)^2 - 2*g^3*i^3
)*a*b^6*c*d^6 + (63*g^3*i^3*log(e)^2 + 15*g^3*i^3*log(e) + g^3*i^3)*a^2*b^5
*d^7)*B^2*x^5 + 6*((105*g^3*i^3*log(e)^2 - 51*g^3*i^3*log(e) + 10*g^3*i^3)*
b^7*c^3*d^4 + (945*g^3*i^3*log(e)^2 - 147*g^3*i^3*log(e) - 10*g^3*i^3)*a*b^
6*c^2*d^5 + (945*g^3*i^3*log(e)^2 + 147*g^3*i^3*log(e) - 10*g^3*i^3)*a^2*b^
```

```
5*c*d^6 + (105*g^3*i^3*log(e)^2 + 51*g^3*i^3*log(e) + 10*g^3*i^3)*a^3*b^4*d
^7)*B^2*x^4 - 2*((6*g^3*i^3*log(e) - 11*g^3*i^3)*b^7*c^4*d^3 - 4*(315*g^3*i
^3*log(e)^2 - 147*g^3*i^3*log(e) + 19*g^3*i^3)*a*b^6*c^3*d^4 - 6*(630*g^3*i
^3*log(e)^2 - 29*g^3*i^3)*a^2*b^5*c^2*d^5 - 4*(315*g^3*i^3*log(e)^2 + 147*g
^3*i^3*log(e) + 19*g^3*i^3)*a^3*b^4*c*d^6 - (6*g^3*i^3*log(e) + 11*g^3*i^3)
*a^4*b^3*d^7)*B^2*x^3 + 3*(3*(2*g^3*i^3*log(e) - 3*g^3*i^3)*b^7*c^5*d^2 - (
42*g^3*i^3*log(e) - 67*g^3*i^3)*a*b^6*c^4*d^3 + 2*(630*g^3*i^3*log(e)^2 - 2
52*g^3*i^3*log(e) - 29*g^3*i^3)*a^2*b^5*c^3*d^4 + 2*(630*g^3*i^3*log(e)^2 +
 252*g^3*i^3*log(e) - 29*g^3*i^3)*a^3*b^4*c^2*d^5 + (42*g^3*i^3*log(e) + 67
*g^3*i^3)*a^4*b^3*c*d^6 - 3*(2*g^3*i^3*log(e) + 3*g^3*i^3)*a^5*b^2*d^7)*B^2
*x^2 - 6*(6*(g^3*i^3*log(e) - g^3*i^3)*b^7*c^6*d - 3*(14*g^3*i^3*log(e) - 1
5*g^3*i^3)*a*b^6*c^5*d^2 + 2*(63*g^3*i^3*log(e) - 73*g^3*i^3)*a^2*b^5*c^4*d
^3 - 2*(210*g^3*i^3*log(e)^2 - 107*g^3*i^3)*a^3*b^4*c^3*d^4 - 2*(63*g^3*i^3
*log(e) + 73*g^3*i^3)*a^4*b^3*c^2*d^5 + 3*(14*g^3*i^3*log(e) + 15*g^3*i^3)*
a^5*b^2*c*d^6 - 6*(g^3*i^3*log(e) + g^3*i^3)*a^6*b*d^7)*B^2*x + 18*(20*B^2*
b^7*d^7*g^3*i^3*x^7 + 140*B^2*a^3*b^4*c^3*d^4*g^3*i^3*x + 70*(b^7*c*d^6*g^3
*i^3 + a*b^6*d^7*g^3*i^3)*B^2*x^6 + 84*(b^7*c^2*d^5*g^3*i^3 + 3*a*b^6*c*d^6
*g^3*i^3 + a^2*b^5*d^7*g^3*i^3)*B^2*x^5 + 35*(b^7*c^3*d^4*g^3*i^3 + 9*a*b^6
*c^2*d^5*g^3*i^3 + 9*a^2*b^5*c*d^6*g^3*i^3 + a^3*b^4*d^7*g^3*i^3)*B^2*x^4 +
 140*(a*b^6*c^3*d^4*g^3*i^3 + 3*a^2*b^5*c^2*d^5*g^3*i^3 + a^3*b^4*c*d^6*g^3
*i^3)*B^2*x^3 + 210*(a^2*b^5*c^3*d^4*g^3*i^3 + a^3*b^4*c^2*d^5*g^3*i^3)*B^2
*x^2 + (35*a^4*b^3*c^3*d^4*g^3*i^3 - 21*a^5*b^2*c^2*d^5*g^3*i^3 + 7*a^6*b*c
*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*B^2)*log(b*x + a)^2 + 18*(20*B^2*b^7*d^7*g^
3*i^3*x^7 + 140*B^2*a^3*b^4*c^3*d^4*g^3*i^3*x + 70*(b^7*c*d^6*g^3*i^3 + a*b
^6*d^7*g^3*i^3)*B^2*x^6 + 84*(b^7*c^2*d^5*g^3*i^3 + 3*a*b^6*c*d^6*g^3*i^3 +
 a^2*b^5*d^7*g^3*i^3)*B^2*x^5 + 35*(b^7*c^3*d^4*g^3*i^3 + 9*a*b^6*c^2*d^5*g
^3*i^3 + 9*a^2*b^5*c*d^6*g^3*i^3 + a^3*b^4*d^7*g^3*i^3)*B^2*x^4 + 140*(a*b^
6*c^3*d^4*g^3*i^3 + 3*a^2*b^5*c^2*d^5*g^3*i^3 + a^3*b^4*c*d^6*g^3*i^3)*B^2*
x^3 + 210*(a^2*b^5*c^3*d^4*g^3*i^3 + a^3*b^4*c^2*d^5*g^3*i^3)*B^2*x^2 - (b^
7*c^7*g^3*i^3 - 7*a*b^6*c^6*d*g^3*i^3 + 21*a^2*b^5*c^5*d^2*g^3*i^3 - 35*a^3
*b^4*c^4*d^3*g^3*i^3)*B^2)*log(d*x + c)^2 + 6*(120*B^2*b^7*d^7*g^3*i^3*x^7*
log(e) + 20*((21*g^3*i^3*log(e) - g^3*i^3)*b^7*c*d^6 + (21*g^3*i^3*log(e) +
 g^3*i^3)*a*b^6*d^7)*B^2*x^6 + 12*(126*a*b^6*c*d^6*g^3*i^3*log(e) + (42*g^3
*i^3*log(e) - 5*g^3*i^3)*b^7*c^2*d^5 + (42*g^3*i^3*log(e) + 5*g^3*i^3)*a^2*
b^5*d^7)*B^2*x^5 + 3*((70*g^3*i^3*log(e) - 17*g^3*i^3)*b^7*c^3*d^4 + 7*(90*
g^3*i^3*log(e) - 7*g^3*i^3)*a*b^6*c^2*d^5 + 7*(90*g^3*i^3*log(e) + 7*g^3*i^
3)*a^2*b^5*c*d^6 + (70*g^3*i^3*log(e) + 17*g^3*i^3)*a^3*b^4*d^7)*B^2*x^4 +
2*(1260*a^2*b^5*c^2*d^5*g^3*i^3*log(e) - b^7*c^4*d^3*g^3*i^3 + a^4*b^3*d^7*
g^3*i^3 + 14*(30*g^3*i^3*log(e) - 7*g^3*i^3)*a*b^6*c^3*d^4 + 14*(30*g^3*i^3
*log(e) + 7*g^3*i^3)*a^3*b^4*c*d^6)*B^2*x^3 + 3*(b^7*c^5*d^2*g^3*i^3 - 7*a*
b^6*c^4*d^3*g^3*i^3 + 7*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^3*i^3 + 84*(5
*g^3*i^3*log(e) - g^3*i^3)*a^2*b^5*c^3*d^4 + 84*(5*g^3*i^3*log(e) + g^3*i^3
)*a^3*b^4*c^2*d^5)*B^2*x^2 + 6*(140*a^3*b^4*c^3*d^4*g^3*i^3*log(e) - b^7*c^
6*d*g^3*i^3 + 7*a*b^6*c^5*d^2*g^3*i^3 - 21*a^2*b^5*c^4*d^3*g^3*i^3 + 21*a^4
*b^3*c^2*d^5*g^3*i^3 - 7*a^5*b^2*c*d^6*g^3*i^3 + a^6*b*d^7*g^3*i^3)*B^2*x -
 (6*a^7*d^7*g^3*i^3*log(e) + 6*a*b^6*c^6*d*g^3*i^3 - 39*a^2*b^5*c^5*d^2*g^3
*i^3 + 107*a^3*b^4*c^4*d^3*g^3*i^3 - (210*g^3*i^3*log(e) + 107*g^3*i^3)*a^4
*b^3*c^3*d^4 + 3*(42*g^3*i^3*log(e) + 13*g^3*i^3)*a^5*b^2*c^2*d^5 - 6*(7*g^
3*i^3*log(e) + g^3*i^3)*a^6*b*c*d^6)*B^2)*log(b*x + a) - 6*(120*B^2*b^7*d^7
*g^3*i^3*x^7*log(e) + 20*((21*g^3*i^3*log(e) - g^3*i^3)*b^7*c*d^6 + (21*g^3
*i^3*log(e) + g^3*i^3)*a*b^6*d^7)*B^2*x^6 + 12*(126*a*b^6*c*d^6*g^3*i^3*log
(e) + (42*g^3*i^3*log(e) - 5*g^3*i^3)*b^7*c^2*d^5 + (42*g^3*i^3*log(e) + 5*
g^3*i^3)*a^2*b^5*d^7)*B^2*x^5 + 3*((70*g^3*i^3*log(e) - 17*g^3*i^3)*b^7*c^3
*d^4 + 7*(90*g^3*i^3*log(e) - 7*g^3*i^3)*a*b^6*c^2*d^5 + 7*(90*g^3*i^3*log(
e) + 7*g^3*i^3)*a^2*b^5*c*d^6 + (70*g^3*i^3*log(e) + 17*g^3*i^3)*a^3*b^4*d^
7)*B^2*x^4 + 2*(1260*a^2*b^5*c^2*d^5*g^3*i^3*log(e) - b^7*c^4*d^3*g^3*i^3 +
 a^4*b^3*d^7*g^3*i^3 + 14*(30*g^3*i^3*log(e) - 7*g^3*i^3)*a*b^6*c^3*d^4 + 1
4*(30*g^3*i^3*log(e) + 7*g^3*i^3)*a^3*b^4*c*d^6)*B^2*x^3 + 3*(b^7*c^5*d^2*g
^3*i^3 - 7*a*b^6*c^4*d^3*g^3*i^3 + 7*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^
```

```
3*i^3 + 84*(5*g^3*i^3*log(e) - g^3*i^3)*a^2*b^5*c^3*d^4 + 84*(5*g^3*i^3*log
(e) + g^3*i^3)*a^3*b^4*c^2*d^5)*B^2*x^2 + 6*(140*a^3*b^4*c^3*d^4*g^3*i^3*lo
g(e) - b^7*c^6*d*g^3*i^3 + 7*a*b^6*c^5*d^2*g^3*i^3 - 21*a^2*b^5*c^4*d^3*g^3
*i^3 + 21*a^4*b^3*c^2*d^5*g^3*i^3 - 7*a^5*b^2*c*d^6*g^3*i^3 + a^6*b*d^7*g^3
*i^3)*B^2*x + 6*(20*B^2*b^7*d^7*g^3*i^3*x^7 + 140*B^2*a^3*b^4*c^3*d^4*g^3*i
^3*x + 70*(b^7*c*d^6*g^3*i^3 + a*b^6*d^7*g^3*i^3)*B^2*x^6 + 84*(b^7*c^2*d^5
*g^3*i^3 + 3*a*b^6*c*d^6*g^3*i^3 + a^2*b^5*d^7*g^3*i^3)*B^2*x^5 + 35*(b^7*c
^3*d^4*g^3*i^3 + 9*a*b^6*c^2*d^5*g^3*i^3 + 9*a^2*b^5*c*d^6*g^3*i^3 + a^3*b^
4*d^7*g^3*i^3)*B^2*x^4 + 140*(a*b^6*c^3*d^4*g^3*i^3 + 3*a^2*b^5*c^2*d^5*g^3
*i^3 + a^3*b^4*c*d^6*g^3*i^3)*B^2*x^3 + 210*(a^2*b^5*c^3*d^4*g^3*i^3 + a^3*
b^4*c^2*d^5*g^3*i^3)*B^2*x^2 + (35*a^4*b^3*c^3*d^4*g^3*i^3 - 21*a^5*b^2*c^2
*d^5*g^3*i^3 + 7*a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*B^2)*log(b*x + a))*
log(d*x + c))/(b^4*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a\,g+b\,g\,x\right)^3\,(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
x)

[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)

[Out] Timed out
```

3.75 $\int (ag+bgx)^2(ci+dix)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx$

Optimal. Leaf size=908

$$\frac{B^2g^2i^3\log\left(\frac{a+bx}{c+dx}\right)(bc-ad)^6}{36b^4d^3}+\frac{Bg^2i^3\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(2A+3B+2B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)(bc-ad)^6}{60b^4d^3}+\frac{11B^2g^2i^3\log(c+dx}{180b^4d^3}$$

```
[Out] -7/180*B^2*(-a*d+b*c)^5*g^2*i^3*x/b^3/d^2-7/360*B^2*(-a*d+b*c)^4*g^2*i^3*(d
*x+c)^2/b^2/d^3-1/60*B^2*(-a*d+b*c)^3*g^2*i^3*(d*x+c)^3/b/d^3+1/60*B^2*(-a*
d+b*c)^2*g^2*i^3*(d*x+c)^4/d^3+1/36*B^2*(-a*d+b*c)^6*g^2*i^3*ln((b*x+a)/(d*
x+c))/b^4/d^3-1/60*B*(-a*d+b*c)^4*g^2*i^3*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+
c)))/b^4/d-1/30*B*(-a*d+b*c)^3*g^2*i^3*(b*x+a)^3*(A+B*ln(e*(b*x+a)/(d*x+c))
)/b^4-1/10*B*(-a*d+b*c)^4*g^2*i^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2
/d^3+1/45*B*(-a*d+b*c)^3*g^2*i^3*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/b/d^
3+7/60*B*(-a*d+b*c)^2*g^2*i^3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^3-1/1
5*b*B*(-a*d+b*c)*g^2*i^3*(d*x+c)^5*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^3+1/60*(-a
*d+b*c)^3*g^2*i^3*(b*x+a)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^4+1/20*(-a*d+b*
c)^2*g^2*i^3*(b*x+a)^3*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^3+1/10*(-a*d
+b*c)*g^2*i^3*(b*x+a)^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^2+1/6*g^2
*i^3*(b*x+a)^3*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b+1/60*B*(-a*d+b*c)^
5*g^2*i^3*(b*x+a)*(2*A+B+2*B*ln(e*(b*x+a)/(d*x+c)))/b^4/d^2+1/60*B*(-a*d+b*
c)^6*g^2*i^3*ln((-a*d+b*c)/b/(d*x+c))*(2*A+3*B+2*B*ln(e*(b*x+a)/(d*x+c)))/b
^4/d^3+11/180*B^2*(-a*d+b*c)^6*g^2*i^3*ln(d*x+c)/b^4/d^3+1/30*B^2*(-a*d+b*c
)^6*g^2*i^3*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/d^3
```

Rubi [A] time = 3.02, antiderivative size = 825, normalized size of antiderivative = 0.91, number of steps used = 86, number of rules used = 13, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.310, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2g^2i^3\log^2(a+bx)(bc-ad)^6}{60b^4d^3}-\frac{B^2g^2i^3\log(a+bx)(bc-ad)^6}{45b^4d^3}-\frac{Bg^2i^3\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)(bc-ad}{30b^4d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,
x]
```

```
[Out] -(A*B*(b*c - a*d)^5*g^2*i^3*x)/(30*b^3*d^2) - (B^2*(b*c - a*d)^5*g^2*i^3*x)
/(45*b^3*d^2) - (7*B^2*(b*c - a*d)^4*g^2*i^3*(c + d*x)^2)/(360*b^2*d^3) - (
B^2*(b*c - a*d)^3*g^2*i^3*(c + d*x)^3)/(60*b*d^3) + (B^2*(b*c - a*d)^2*g^2*
i^3*(c + d*x)^4)/(60*d^3) - (B^2*(b*c - a*d)^6*g^2*i^3*Log[a + b*x])/(45*b^
4*d^3) + (B^2*(b*c - a*d)^6*g^2*i^3*Log[a + b*x]^2)/(60*b^4*d^3) - (B^2*(b*
c - a*d)^5*g^2*i^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(30*b^4*d^2) - (
B*(b*c - a*d)^4*g^2*i^3*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(
60*b^2*d^3) - (B*(b*c - a*d)^3*g^2*i^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))
/(c + d*x)]))/(90*b*d^3) + (7*B*(b*c - a*d)^2*g^2*i^3*(c + d*x)^4*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]))/(60*d^3) - (b*B*(b*c - a*d)*g^2*i^3*(c + d*x)^
5*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(15*d^3) - (B*(b*c - a*d)^6*g^2*i^3
*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(30*b^4*d^3) + ((b*c -
a*d)^2*g^2*i^3*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(4*d^3)
- (2*b*(b*c - a*d)*g^2*i^3*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])
^2)/(5*d^3) + (b^2*g^2*i^3*(c + d*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)])
^2)/(6*d^3) + (B^2*(b*c - a*d)^6*g^2*i^3*Log[c + d*x])/(30*b^4*d^3) - (B^2*
(b*c - a*d)^6*g^2*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(30*b^4*
d^3) - (B^2*(b*c - a*d)^6*g^2*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])
/(30*b^4*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
```

```
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (75c+75dx)^3(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx = \int \left(\frac{(-bc+ad)^2g^2(75c+75dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right.}{d^2}\right.$$

$$= \frac{(b^2g^2)\int (75c+75dx)^5\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx}{5625d^2} - \Big($$

$$= \frac{421875(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4d^3} -$$

$$= \frac{421875(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4d^3} -$$

$$= \frac{421875(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4d^3} -$$

$$= \frac{421875(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4d^3} -$$

$$= -\frac{28125AB(bc-ad)^5g^2x}{2b^3d^2} - \frac{28125B(bc-ad)^4g^2(c+}{4b}$$

$$= -\frac{28125AB(bc-ad)^5g^2x}{2b^3d^2} - \frac{28125B^2(bc-ad)^5g^2(a+}{2b^4d^2}$$

$$= -\frac{28125AB(bc-ad)^5g^2x}{2b^3d^2} - \frac{28125B^2(bc-ad)^5g^2(a+}{2b^4d^2}$$

$$= -\frac{28125AB(bc-ad)^5g^2x}{2b^3d^2} - \frac{9375B^2(bc-ad)^5g^2x}{b^3d^2} - 6$$

$$= -\frac{28125AB(bc-ad)^5g^2x}{2b^3d^2} - \frac{9375B^2(bc-ad)^5g^2x}{b^3d^2} - 6$$

$$= -\frac{28125AB(bc-ad)^5g^2x}{2b^3d^2} - \frac{9375B^2(bc-ad)^5g^2x}{b^3d^2} - 6$$

$$= -\frac{28125AB(bc-ad)^5g^2x}{2b^3d^2} - \frac{9375B^2(bc-ad)^5g^2x}{b^3d^2} - 6$$

Mathematica [A] time = 1.38, size = 1555, normalized size = 1.71

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x
)])^2,x]
```

```
[Out] (g^2*i^3*(15*(b*c - a*d)^2*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])
^2 - 24*b*(b*c - a*d)*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 +
10*b^2*(c + d*x)^6*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (5*B*(b*c - a*d
```

```
)^3*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*(b*d*x + (b*c - a*d)*Log[a
 + b*x]) - B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c -
a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c +
 d*x)] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])
 + 2*b^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*(b*c - a*d)^3
*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*c - a*d)^3*Log[
c + d*x] - 3*B*(b*c - a*d)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*
x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^4 + (2*
B*(b*c - a*d)^2*(24*A*b*d*(b*c - a*d)^3*x - 12*B*(b*c - a*d)^3*(b*d*x + (b*
c - a*d)*Log[a + b*x]) - 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x + b^2*(c +
d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) - B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2
*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Lo
g[a + b*x]) + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] +
 12*b^2*(b*c - a*d)^2*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 8*
b^3*(b*c - a*d)*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*b^4*(c
 + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 24*(b*c - a*d)^4*Log[a + b
*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 24*B*(b*c - a*d)^4*Log[c + d*x]
- 12*B*(b*c - a*d)^4*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c
 - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^4 - (B*(b*c - a
*d)*(120*A*b*d*(b*c - a*d)^4*x - 60*B*(b*c - a*d)^4*(b*d*x + (b*c - a*d)*Lo
g[a + b*x]) - 20*B*(b*c - a*d)^3*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2
*(b*c - a*d)^2*Log[a + b*x]) - 5*B*(b*c - a*d)^2*(6*b*d*(b*c - a*d)^2*x + 3
*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a +
b*x]) - 2*B*(b*c - a*d)*(12*b*d*(b*c - a*d)^3*x + 6*b^2*(b*c - a*d)^2*(c +
d*x)^2 + 4*b^3*(b*c - a*d)*(c + d*x)^3 + 3*b^4*(c + d*x)^4 + 12*(b*c - a*d)
^4*Log[a + b*x]) + 120*B*d*(b*c - a*d)^4*(a + b*x)*Log[(e*(a + b*x))/(c + d
*x)] + 60*b^2*(b*c - a*d)^3*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]
) + 40*b^3*(b*c - a*d)^2*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) +
 30*b^4*(b*c - a*d)*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 24*b
^5*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 120*(b*c - a*d)^5*Log
[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 120*B*(b*c - a*d)^5*Log[c
+ d*x] - 60*B*(b*c - a*d)^5*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x
))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(6*b^4)))/
(60*d^3)
```

fricas [F] time = 1.38, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2b^2d^3g^2i^3x^5 + A^2a^2c^3g^2i^3 + \left(3\,A^2b^2cd^2 + 2\,A^2abd^3\right)g^2i^3x^4 + \left(3\,A^2b^2c^2d + 6\,A^2abcd^2 + A^2a^2d^3\right)g^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="fricas")
```

```
[Out] integral(A^2*b^2*d^3*g^2*i^3*x^5 + A^2*a^2*c^3*g^2*i^3 + (3*A^2*b^2*c*d^2 +
 2*A^2*a*b*d^3)*g^2*i^3*x^4 + (3*A^2*b^2*c^2*d + 6*A^2*a*b*c*d^2 + A^2*a^2*
d^3)*g^2*i^3*x^3 + (A^2*b^2*c^3 + 6*A^2*a*b*c^2*d + 3*A^2*a^2*c*d^2)*g^2*i^
3*x^2 + (2*A^2*a*b*c^3 + 3*A^2*a^2*c^2*d)*g^2*i^3*x + (B^2*b^2*d^3*g^2*i^3*
x^5 + B^2*a^2*c^3*g^2*i^3 + (3*B^2*b^2*c*d^2 + 2*B^2*a*b*d^3)*g^2*i^3*x^4 +
 (3*B^2*b^2*c^2*d + 6*B^2*a*b*c*d^2 + B^2*a^2*d^3)*g^2*i^3*x^3 + (B^2*b^2*c
^3 + 6*B^2*a*b*c^2*d + 3*B^2*a^2*c*d^2)*g^2*i^3*x^2 + (2*B^2*a*b*c^3 + 3*B^
2*a^2*c^2*d)*g^2*i^3*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^2*d^3*g^2
*i^3*x^5 + A*B*a^2*c^3*g^2*i^3 + (3*A*B*b^2*c*d^2 + 2*A*B*a*b*d^3)*g^2*i^3*
x^4 + (3*A*B*b^2*c^2*d + 6*A*B*a*b*c*d^2 + A*B*a^2*d^3)*g^2*i^3*x^3 + (A*B*
b^2*c^3 + 6*A*B*a*b*c^2*d + 3*A*B*a^2*c*d^2)*g^2*i^3*x^2 + (2*A*B*a*b*c^3 +
 3*A*B*a^2*c^2*d)*g^2*i^3*x)*log((b*e*x + a*e)/(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.81, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{2} \left(dix+ci\right)^{3} \left(B\ln\left(\frac{\left(bx+a\right)e}{dx+c}\right)+A\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 2.86, size = 5196, normalized size = 5.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, alg
orithm="maxima")
```

```
[Out] 1/6*A^2*b^2*d^3*g^2*i^3*x^6 + 3/5*A^2*b^2*c*d^2*g^2*i^3*x^5 + 2/5*A^2*a*b*d
^3*g^2*i^3*x^5 + 3/4*A^2*b^2*c^2*d*g^2*i^3*x^4 + 3/2*A^2*a*b*c*d^2*g^2*i^3*
x^4 + 1/4*A^2*a^2*d^3*g^2*i^3*x^4 + 1/3*A^2*b^2*c^3*g^2*i^3*x^3 + 2*A^2*a*b
*c^2*d*g^2*i^3*x^3 + A^2*a^2*c*d^2*g^2*i^3*x^3 + A^2*a*b*c^3*g^2*i^3*x^2 +
3/2*A^2*a^2*c^2*d*g^2*i^3*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) +
 a*log(b*x + a)/b - c*log(d*x + c)/d)*A*B*a^2*c^3*g^2*i^3 + 2*(x^2*log(b*e*
x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2
- (b*c - a*d)*x/(b*d))*A*B*a*b*c^3*g^2*i^3 + 1/3*(2*x^3*log(b*e*x/(d*x + c)
 + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2
*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*b^2*c^3*g^2*i
^3 + 3*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c
^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*B*a^2*c^2*d*g^2*i^3 + 2*(2*x^3
*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(
d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2
))*A*B*a*b*c^2*d*g^2*i^3 + 1/4*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c))
- 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d
^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3
))*A*B*b^2*c^2*d*g^2*i^3 + (2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*
a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 -
2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a^2*c*d^2*g^2*i^3 + 1/2*(6*x^4*log(
b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x +
 c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 +
6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*a*b*c*d^2*g^2*i^3 + 1/10*(12*x^5*lo
g(b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d
*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4
)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)
)*A*B*b^2*c*d^2*g^2*i^3 + 1/12*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c))
- 6*a^4*log(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d
^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3
))*A*B*a^2*d^3*g^2*i^3 + 1/15*(12*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c))
+ 12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3
*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x
^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4))*A*B*a*b*d^3*g^2*i^3 + 1/180*(60*x
^6*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 60*a^6*log(b*x + a)/b^6 + 60*c^6*
log(d*x + c)/d^6 - (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*
```

```
b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d
^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5))*A*B*b^2*d^3*g^2*i^3 + A^2*a^
2*c^3*g^2*i^3*x - 1/180*(74*a^3*b^2*c^3*d^3*g^2*i^3 - 33*a^4*b*c^2*d^4*g^2*
i^3 + 6*a^5*c*d^5*g^2*i^3 + 2*(3*g^2*i^3*log(e) - g^2*i^3)*b^5*c^6 - 18*(2*
g^2*i^3*log(e) - g^2*i^3)*a*b^4*c^5*d + 9*(10*g^2*i^3*log(e) - 7*g^2*i^3)*a
^2*b^3*c^4*d^2)*B^2*log(d*x + c)/(b^3*d^3) - 1/30*(b^6*c^6*g^2*i^3 - 6*a*b^
5*c^5*d*g^2*i^3 + 15*a^2*b^4*c^4*d^2*g^2*i^3 - 20*a^3*b^3*c^3*d^3*g^2*i^3 +
 15*a^4*b^2*c^2*d^4*g^2*i^3 - 6*a^5*b*c*d^5*g^2*i^3 + a^6*d^6*g^2*i^3)*(log
(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c -
a*d)))*B^2/(b^4*d^3) + 1/360*(60*B^2*b^6*d^6*g^2*i^3*x^6*log(e)^2 + 24*((9*
g^2*i^3*log(e)^2 - g^2*i^3*log(e))*b^6*c*d^5 + (6*g^2*i^3*log(e)^2 + g^2*i^
3*log(e))*a*b^5*d^6)*B^2*x^5 + 6*((45*g^2*i^3*log(e)^2 - 13*g^2*i^3*log(e)
+ g^2*i^3)*b^6*c^2*d^4 + 2*(45*g^2*i^3*log(e)^2 + 3*g^2*i^3*log(e) - g^2*i^
3)*a*b^5*c*d^5 + (15*g^2*i^3*log(e)^2 + 7*g^2*i^3*log(e) + g^2*i^3)*a^2*b^4
*d^6)*B^2*x^4 + 2*((60*g^2*i^3*log(e)^2 - 38*g^2*i^3*log(e) + 9*g^2*i^3)*b^
6*c^3*d^3 + 3*(120*g^2*i^3*log(e)^2 - 14*g^2*i^3*log(e) - 5*g^2*i^3)*a*b^5*
c^2*d^4 + 3*(60*g^2*i^3*log(e)^2 + 26*g^2*i^3*log(e) + g^2*i^3)*a^2*b^4*c*d
^5 + (2*g^2*i^3*log(e) + 3*g^2*i^3)*a^3*b^3*d^6)*B^2*x^3 - ((6*g^2*i^3*log(
e) - 11*g^2*i^3)*b^6*c^4*d^2 - 2*(180*g^2*i^3*log(e)^2 - 102*g^2*i^3*log(e)
 + 5*g^2*i^3)*a*b^5*c^3*d^3 - 60*(9*g^2*i^3*log(e)^2 + 3*g^2*i^3*log(e) - g
^2*i^3)*a^2*b^4*c^2*d^4 - 2*(18*g^2*i^3*log(e) + 23*g^2*i^3)*a^3*b^3*c*d^5
+ (6*g^2*i^3*log(e) + 7*g^2*i^3)*a^4*b^2*d^6)*B^2*x^2 + 2*(2*(3*g^2*i^3*log
(e) - 4*g^2*i^3)*b^6*c^5*d - 3*(12*g^2*i^3*log(e) - 17*g^2*i^3)*a*b^5*c^4*d
^2 + (180*g^2*i^3*log(e)^2 - 30*g^2*i^3*log(e) - 97*g^2*i^3)*a^2*b^4*c^3*d^
3 + (90*g^2*i^3*log(e) + 77*g^2*i^3)*a^3*b^3*c^2*d^4 - 9*(4*g^2*i^3*log(e)
+ 3*g^2*i^3)*a^4*b^2*c*d^5 + 2*(3*g^2*i^3*log(e) + 2*g^2*i^3)*a^5*b*d^6)*B^
2*x + 6*(10*B^2*b^6*d^6*g^2*i^3*x^6 + 60*B^2*a^2*b^4*c^3*d^3*g^2*i^3*x + 12
*(3*b^6*c*d^5*g^2*i^3 + 2*a*b^5*d^6*g^2*i^3)*B^2*x^5 + 15*(3*b^6*c^2*d^4*g^
2*i^3 + 6*a*b^5*c*d^5*g^2*i^3 + a^2*b^4*d^6*g^2*i^3)*B^2*x^4 + 20*(b^6*c^3*
d^3*g^2*i^3 + 6*a*b^5*c^2*d^4*g^2*i^3 + 3*a^2*b^4*c*d^5*g^2*i^3)*B^2*x^3 +
30*(2*a*b^5*c^3*d^3*g^2*i^3 + 3*a^2*b^4*c^2*d^4*g^2*i^3)*B^2*x^2 + (20*a^3*
b^3*c^3*d^3*g^2*i^3 - 15*a^4*b^2*c^2*d^4*g^2*i^3 + 6*a^5*b*c*d^5*g^2*i^3 -
a^6*d^6*g^2*i^3)*B^2)*log(b*x + a)^2 + 6*(10*B^2*b^6*d^6*g^2*i^3*x^6 + 60*B
^2*a^2*b^4*c^3*d^3*g^2*i^3*x + 12*(3*b^6*c*d^5*g^2*i^3 + 2*a*b^5*d^6*g^2*i^
3)*B^2*x^5 + 15*(3*b^6*c^2*d^4*g^2*i^3 + 6*a*b^5*c*d^5*g^2*i^3 + a^2*b^4*d^
6*g^2*i^3)*B^2*x^4 + 20*(b^6*c^3*d^3*g^2*i^3 + 6*a*b^5*c^2*d^4*g^2*i^3 + 3*
a^2*b^4*c*d^5*g^2*i^3)*B^2*x^3 + 30*(2*a*b^5*c^3*d^3*g^2*i^3 + 3*a^2*b^4*c^
2*d^4*g^2*i^3)*B^2*x^2 + (b^6*c^6*g^2*i^3 - 6*a*b^5*c^5*d*g^2*i^3 + 15*a^2*
b^4*c^4*d^2*g^2*i^3)*B^2)*log(d*x + c)^2 + 2*(60*B^2*b^6*d^6*g^2*i^3*x^6*lo
g(e) + 12*((18*g^2*i^3*log(e) - g^2*i^3)*b^6*c*d^5 + (12*g^2*i^3*log(e) + g
^2*i^3)*a*b^5*d^6)*B^2*x^5 + 3*((90*g^2*i^3*log(e) - 13*g^2*i^3)*b^6*c^2*d^
4 + 6*(30*g^2*i^3*log(e) + g^2*i^3)*a*b^5*c*d^5 + (30*g^2*i^3*log(e) + 7*g^
2*i^3)*a^2*b^4*d^6)*B^2*x^4 + 2*(a^3*b^3*d^6*g^2*i^3 + (60*g^2*i^3*log(e) -
 19*g^2*i^3)*b^6*c^3*d^3 + 3*(120*g^2*i^3*log(e) - 7*g^2*i^3)*a*b^5*c^2*d^4
 + 3*(60*g^2*i^3*log(e) + 13*g^2*i^3)*a^2*b^4*c*d^5)*B^2*x^3 - 3*(b^6*c^4*d
^2*g^2*i^3 - 6*a^3*b^3*c*d^5*g^2*i^3 + a^4*b^2*d^6*g^2*i^3 - 2*(60*g^2*i^3*
log(e) - 17*g^2*i^3)*a*b^5*c^3*d^3 - 30*(6*g^2*i^3*log(e) + g^2*i^3)*a^2*b^
4*c^2*d^4)*B^2*x^2 + 6*(b^6*c^5*d*g^2*i^3 - 6*a*b^5*c^4*d^2*g^2*i^3 + 15*a^
3*b^3*c^2*d^4*g^2*i^3 - 6*a^4*b^2*c*d^5*g^2*i^3 + a^5*b*d^6*g^2*i^3 + 5*(12
*g^2*i^3*log(e) - g^2*i^3)*a^2*b^4*c^3*d^3)*B^2*x + (6*a*b^5*c^5*d*g^2*i^3
- 33*a^2*b^4*c^4*d^2*g^2*i^3 + 2*(60*g^2*i^3*log(e) + 17*g^2*i^3)*a^3*b^3*c
^3*d^3 - 3*(30*g^2*i^3*log(e) + g^2*i^3)*a^4*b^2*c^2*d^4 + 6*(6*g^2*i^3*log
(e) - g^2*i^3)*a^5*b*c*d^5 - 2*(3*g^2*i^3*log(e) - g^2*i^3)*a^6*d^6)*B^2)*l
og(b*x + a) - 2*(60*B^2*b^6*d^6*g^2*i^3*x^6*log(e) + 12*((18*g^2*i^3*log(e)
 - g^2*i^3)*b^6*c*d^5 + (12*g^2*i^3*log(e) + g^2*i^3)*a*b^5*d^6)*B^2*x^5 +
3*((90*g^2*i^3*log(e) - 13*g^2*i^3)*b^6*c^2*d^4 + 6*(30*g^2*i^3*log(e) + g^
2*i^3)*a*b^5*c*d^5 + (30*g^2*i^3*log(e) + 7*g^2*i^3)*a^2*b^4*d^6)*B^2*x^4 +
 2*(a^3*b^3*d^6*g^2*i^3 + (60*g^2*i^3*log(e) - 19*g^2*i^3)*b^6*c^3*d^3 + 3*
(120*g^2*i^3*log(e) - 7*g^2*i^3)*a*b^5*c^2*d^4 + 3*(60*g^2*i^3*log(e) + 13*
```

```
g^2*i^3)*a^2*b^4*c*d^5)*B^2*x^3 - 3*(b^6*c^4*d^2*g^2*i^3 - 6*a^3*b^3*c*d^5*
g^2*i^3 + a^4*b^2*d^6*g^2*i^3 - 2*(60*g^2*i^3*log(e) - 17*g^2*i^3)*a*b^5*c^
3*d^3 - 30*(6*g^2*i^3*log(e) + g^2*i^3)*a^2*b^4*c^2*d^4)*B^2*x^2 + 6*(b^6*c
^5*d*g^2*i^3 - 6*a*b^5*c^4*d^2*g^2*i^3 + 15*a^3*b^3*c^2*d^4*g^2*i^3 - 6*a^4
*b^2*c*d^5*g^2*i^3 + a^5*b*d^6*g^2*i^3 + 5*(12*g^2*i^3*log(e) - g^2*i^3)*a^
2*b^4*c^3*d^3)*B^2*x + 6*(10*B^2*b^6*d^6*g^2*i^3*x^6 + 60*B^2*a^2*b^4*c^3*d
^3*g^2*i^3*x + 12*(3*b^6*c*d^5*g^2*i^3 + 2*a*b^5*d^6*g^2*i^3)*B^2*x^5 + 15*
(3*b^6*c^2*d^4*g^2*i^3 + 6*a*b^5*c*d^5*g^2*i^3 + a^2*b^4*d^6*g^2*i^3)*B^2*x
^4 + 20*(b^6*c^3*d^3*g^2*i^3 + 6*a*b^5*c^2*d^4*g^2*i^3 + 3*a^2*b^4*c*d^5*g^
2*i^3)*B^2*x^3 + 30*(2*a*b^5*c^3*d^3*g^2*i^3 + 3*a^2*b^4*c^2*d^4*g^2*i^3)*B
^2*x^2 + (20*a^3*b^3*c^3*d^3*g^2*i^3 - 15*a^4*b^2*c^2*d^4*g^2*i^3 + 6*a^5*b
*c*d^5*g^2*i^3 - a^6*d^6*g^2*i^3)*B^2)*log(b*x + a))*log(d*x + c))/(b^4*d^3
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a\,g+b\,g\,x\right)^2\,{\left(c\,i+d\,i\,x\right)}^3\,{\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
x)
```

```
[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

3.76 $\int (ag+bgx)(ci+dix)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx$

Optimal. Leaf size=730

$$-\frac{Bgi^3(bc-ad)^5\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A+B\right)}{10b^4d^2}-\frac{Bgi^3(a+bx)(bc-ad)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{10b^4d}+\frac{gi^3(a+\cdots}{}$$

```
[Out] 1/60*B^2*(-a*d+b*c)^4*g*i^3*x/b^3/d+1/30*B^2*(-a*d+b*c)^3*g*i^3*(d*x+c)^2/b
^2/d^2+1/30*B^2*(-a*d+b*c)^2*g*i^3*(d*x+c)^3/b/d^2-1/12*B^2*(-a*d+b*c)^5*g*
i^3*ln((b*x+a)/(d*x+c))/b^4/d^2-1/10*B*(-a*d+b*c)^4*g*i^3*(b*x+a)*(A+B*ln(e
*(b*x+a)/(d*x+c)))/b^4/d-1/10*B*(-a*d+b*c)^3*g*i^3*(b*x+a)^2*(A+B*ln(e*(b*x
+a)/(d*x+c)))/b^4+3/20*B*(-a*d+b*c)^3*g*i^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*
x+c)))/b^2/d^2+1/30*B*(-a*d+b*c)^2*g*i^3*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c
)))/b/d^2-1/10*B*(-a*d+b*c)*g*i^3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^2
+1/20*(-a*d+b*c)^3*g*i^3*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^4+1/10*(
-a*d+b*c)^2*g*i^3*(b*x+a)^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^3+3/20*
(-a*d+b*c)*g*i^3*(b*x+a)^2*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^2+1/5*
g*i^3*(b*x+a)^2*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b-1/10*B*(-a*d+b*c)
^5*g*i^3*ln((-a*d+b*c)/b/(d*x+c))*(A+B+B*ln(e*(b*x+a)/(d*x+c)))/b^4/d^2-11/
60*B^2*(-a*d+b*c)^5*g*i^3*ln(d*x+c)/b^4/d^2-1/10*B^2*(-a*d+b*c)^5*g*i^3*pol
ylog(2,d*(b*x+a)/b/(d*x+c))/b^4/d^2
```

Rubi [A] time = 1.78, antiderivative size = 655, normalized size of antiderivative = 0.90, number of steps used = 54, number of rules used = 13, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.325, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2gi^3(bc-ad)^5\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{10b^4d^2}+\frac{Bgi^3(bc-ad)^5\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{10b^4d^2}+\frac{Bgi^3(c+dx)^2(bc-a\cdots}{2\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] (A*B*(b*c - a*d)^4*g*i^3*x)/(10*b^3*d) + (B^2*(b*c - a*d)^4*g*i^3*x)/(60*b^
3*d) + (B^2*(b*c - a*d)^3*g*i^3*(c + d*x)^2)/(30*b^2*d^2) + (B^2*(b*c - a*d
)^2*g*i^3*(c + d*x)^3)/(30*b*d^2) + (B^2*(b*c - a*d)^5*g*i^3*Log[a + b*x])/
(60*b^4*d^2) - (B^2*(b*c - a*d)^5*g*i^3*Log[a + b*x]^2)/(20*b^4*d^2) + (B^2
*(b*c - a*d)^4*g*i^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(10*b^4*d) + (
B*(b*c - a*d)^3*g*i^3*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(20
*b^2*d^2) + (B*(b*c - a*d)^2*g*i^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c
+ d*x)]))/(30*b*d^2) - (B*(b*c - a*d)*g*i^3*(c + d*x)^4*(A + B*Log[(e*(a +
b*x))/(c + d*x)]))/(10*d^2) + (B*(b*c - a*d)^5*g*i^3*Log[a + b*x]*(A + B*Lo
g[(e*(a + b*x))/(c + d*x)]))/(10*b^4*d^2) - ((b*c - a*d)*g*i^3*(c + d*x)^4*
(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(4*d^2) + (b*g*i^3*(c + d*x)^5*(A +
 B*Log[(e*(a + b*x))/(c + d*x)])^2)/(5*d^2) - (B^2*(b*c - a*d)^5*g*i^3*Log[
c + d*x])/(10*b^4*d^2) + (B^2*(b*c - a*d)^5*g*i^3*Log[a + b*x]*Log[(b*(c +
d*x))/(b*c - a*d)])/(10*b^4*d^2) + (B^2*(b*c - a*d)^5*g*i^3*PolyLog[2, -((d
*(a + b*x))/(b*c - a*d))])/(10*b^4*d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (76c+76dx)^3(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx = \int\left(\frac{(-bc+ad)g(76c+76dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d}\right.$$

$$=\frac{(bg)\int(76c+76dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx}{76d}+\frac{((-b}{}$$

$$=-\frac{109744(bc-ad)g(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d^2}+$$

$$=-\frac{109744(bc-ad)g(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d^2}+$$

$$=-\frac{109744(bc-ad)g(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d^2}+$$

$$=-\frac{109744(bc-ad)g(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{d^2}+$$

$$=\frac{219488AB(bc-ad)^4gx}{5b^3d}+\frac{109744B(bc-ad)^3g(c+dx}{5b^2d}$$

$$=\frac{219488AB(bc-ad)^4gx}{5b^3d}+\frac{219488B^2(bc-ad)^4g(a+b}{5b^4d}$$

$$=\frac{219488AB(bc-ad)^4gx}{5b^3d}+\frac{219488B^2(bc-ad)^4g(a+b}{5b^4d}$$

$$=\frac{219488AB(bc-ad)^4gx}{5b^3d}+\frac{109744B^2(bc-ad)^4gx}{15b^3d}+\frac{2}{}$$

$$=\frac{219488AB(bc-ad)^4gx}{5b^3d}+\frac{109744B^2(bc-ad)^4gx}{15b^3d}+\frac{2}{}$$

$$=\frac{219488AB(bc-ad)^4gx}{5b^3d}+\frac{109744B^2(bc-ad)^4gx}{15b^3d}+\frac{2}{}$$

$$=\frac{219488AB(bc-ad)^4gx}{5b^3d}+\frac{109744B^2(bc-ad)^4gx}{15b^3d}+\frac{2}{}$$

Mathematica [A] time = 0.74, size = 901, normalized size = 1.23

$$\frac{gi^3\left(4b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2(c+dx)^5-5(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2(c+dx)^4+\frac{5B(bc-ad)^2\left(6\log(a+bx)\left(A+B\log\right.\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]
)^2,x]
```

```
[Out] (g*i^3*(-5*(b*c - a*d)*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 +
 4*b*(c + d*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + (5*B*(b*c - a*d)^
```

```
2*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*(b*d*x + (b*c - a*d)*Log[a +
 b*x]) - B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*
d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d
*x)] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) +
 2*b^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*(b*c - a*d)^3*L
og[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*c - a*d)^3*Log[c
+ d*x] - 3*B*(b*c - a*d)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x)
)/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(3*b^4) - (
B*(b*c - a*d)*(24*A*b*d*(b*c - a*d)^3*x - 12*B*(b*c - a*d)^3*(b*d*x + (b*c
- a*d)*Log[a + b*x]) - 4*B*(b*c - a*d)^2*(2*b*d*(b*c - a*d)*x + b^2*(c + d*
x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) - B*(b*c - a*d)*(6*b*d*(b*c - a*d)^2*x
 + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[
a + b*x]) + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] + 1
2*b^2*(b*c - a*d)^2*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 8*b^
3*(b*c - a*d)*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*b^4*(c +
 d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 24*(b*c - a*d)^4*Log[a + b*x
]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 24*B*(b*c - a*d)^4*Log[c + d*x] -
12*B*(b*c - a*d)^4*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c -
 a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(3*b^4)))/(20*d^2)
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2bd^3gi^3x^4 + A^2ac^3gi^3 + \left(3\,A^2bcd^2 + A^2ad^3\right)gi^3x^3 + 3\left(A^2bc^2d + A^2acd^2\right)gi^3x^2 + \left(A^2bc^3 + 3\,A^2ac\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="fricas")
```

```
[Out] integral(A^2*b*d^3*g*i^3*x^4 + A^2*a*c^3*g*i^3 + (3*A^2*b*c*d^2 + A^2*a*d^3
)*g*i^3*x^3 + 3*(A^2*b*c^2*d + A^2*a*c*d^2)*g*i^3*x^2 + (A^2*b*c^3 + 3*A^2*
a*c^2*d)*g*i^3*x + (B^2*b*d^3*g*i^3*x^4 + B^2*a*c^3*g*i^3 + (3*B^2*b*c*d^2
+ B^2*a*d^3)*g*i^3*x^3 + 3*(B^2*b*c^2*d + B^2*a*c*d^2)*g*i^3*x^2 + (B^2*b*c
^3 + 3*B^2*a*c^2*d)*g*i^3*x)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b*d^3*
g*i^3*x^4 + A*B*a*c^3*g*i^3 + (3*A*B*b*c*d^2 + A*B*a*d^3)*g*i^3*x^3 + 3*(A*
B*b*c^2*d + A*B*a*c*d^2)*g*i^3*x^2 + (A*B*b*c^3 + 3*A*B*a*c^2*d)*g*i^3*x)*l
og((b*e*x + a*e)/(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.36, size = 0, normalized size = 0.00

$$\int \left(bgx + ag\right)\left(dix + ci\right)^3\left(B\ln\left(\frac{(bx+a)\,e}{dx+c}\right) + A\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 2.41, size = 3218, normalized size = 4.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algor
ithm="maxima")
```

```
[Out] 1/5*A^2*b*d^3*g*i^3*x^5 + 3/4*A^2*b*c*d^2*g*i^3*x^4 + 1/4*A^2*a*d^3*g*i^3*x
^4 + A^2*b*c^2*d*g*i^3*x^3 + A^2*a*c*d^2*g*i^3*x^3 + 1/2*A^2*b*c^3*g*i^3*x^
2 + 3/2*A^2*a*c^2*d*g*i^3*x^2 + 2*(x*log(b*e*x/(d*x + c) + a*e/(d*x + c)) +
 a*log(b*x + a)/b - c*log(d*x + c)/d)*A*B*a*c^3*g*i^3 + (x^2*log(b*e*x/(d*x
 + c) + a*e/(d*x + c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c
 - a*d)*x/(b*d))*A*B*b*c^3*g*i^3 + 3*(x^2*log(b*e*x/(d*x + c) + a*e/(d*x +
c)) - a^2*log(b*x + a)/b^2 + c^2*log(d*x + c)/d^2 - (b*c - a*d)*x/(b*d))*A*
B*a*c^2*d*g*i^3 + (2*x^3*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 2*a^3*log(b
*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^
2 - a^2*d^2)*x)/(b^2*d^2))*A*B*b*c^2*d*g*i^3 + (2*x^3*log(b*e*x/(d*x + c) +
 a*e/(d*x + c)) + 2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c
*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A*B*a*c*d^2*g*i^3 +
 1/4*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 +
 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a
^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*b*c*d^2*g*i^3 + 1/1
2*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log(b*x + a)/b^4 + 6*
c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*
b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*a*d^3*g*i^3 + 1/30*(12
*x^5*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 12*a^5*log(b*x + a)/b^5 - 12*c^
5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*
b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b
^4*d^4))*A*B*b*d^3*g*i^3 + A^2*a*c^3*g*i^3*x - 1/60*(47*a^2*b^2*c^3*d^2*g*i
^3 - 27*a^3*b*c^2*d^3*g*i^3 + 6*a^4*c*d^4*g*i^3 - (6*g*i^3*log(e) - 5*g*i^3
)*b^4*c^5 + (30*g*i^3*log(e) - 31*g*i^3)*a*b^3*c^4*d)*B^2*log(d*x + c)/(b^3
*d^2) + 1/10*(b^5*c^5*g*i^3 - 5*a*b^4*c^4*d*g*i^3 + 10*a^2*b^3*c^3*d^2*g*i^
3 - 10*a^3*b^2*c^2*d^3*g*i^3 + 5*a^4*b*c*d^4*g*i^3 - a^5*d^5*g*i^3)*(log(b*
x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d
)))*B^2/(b^4*d^2) + 1/60*(12*B^2*b^5*d^5*g*i^3*x^5*log(e)^2 + 3*((15*g*i^3*
log(e)^2 - 2*g*i^3*log(e))*b^5*c*d^4 + (5*g*i^3*log(e)^2 + 2*g*i^3*log(e))*
a*b^4*d^5)*B^2*x^4 + 2*((30*g*i^3*log(e)^2 - 11*g*i^3*log(e) + g*i^3)*b^5*c
^2*d^3 + 2*(15*g*i^3*log(e)^2 + 5*g*i^3*log(e) - g*i^3)*a*b^4*c*d^4 + (g*i^
3*log(e) + g*i^3)*a^2*b^3*d^5)*B^2*x^3 + ((30*g*i^3*log(e)^2 - 27*g*i^3*log
(e) + 8*g*i^3)*b^5*c^3*d^2 + 3*(30*g*i^3*log(e)^2 + 5*g*i^3*log(e) - 6*g*i^
3)*a*b^4*c^2*d^3 + 3*(5*g*i^3*log(e) + 4*g*i^3)*a^2*b^3*c*d^4 - (3*g*i^3*lo
g(e) + 2*g*i^3)*a^3*b^2*d^5)*B^2*x^2 - ((6*g*i^3*log(e) - 11*g*i^3)*b^5*c^4
*d - 2*(30*g*i^3*log(e)^2 - 15*g*i^3*log(e) - 14*g*i^3)*a*b^4*c^3*d^2 - 12*
(5*g*i^3*log(e) + 2*g*i^3)*a^2*b^3*c^2*d^3 + 2*(15*g*i^3*log(e) + 4*g*i^3)*
a^3*b^2*c*d^4 - (6*g*i^3*log(e) + g*i^3)*a^4*b*d^5)*B^2*x + 3*(4*B^2*b^5*d^
5*g*i^3*x^5 + 20*B^2*a*b^4*c^3*d^2*g*i^3*x + 5*(3*b^5*c*d^4*g*i^3 + a*b^4*d
^5*g*i^3)*B^2*x^4 + 20*(b^5*c^2*d^3*g*i^3 + a*b^4*c*d^4*g*i^3)*B^2*x^3 + 10
*(b^5*c^3*d^2*g*i^3 + 3*a*b^4*c^2*d^3*g*i^3)*B^2*x^2 + (10*a^2*b^3*c^3*d^2*
g*i^3 - 10*a^3*b^2*c^2*d^3*g*i^3 + 5*a^4*b*c*d^4*g*i^3 - a^5*d^5*g*i^3)*B^2
)*log(b*x + a)^2 + 3*(4*B^2*b^5*d^5*g*i^3*x^5 + 20*B^2*a*b^4*c^3*d^2*g*i^3*
x + 5*(3*b^5*c*d^4*g*i^3 + a*b^4*d^5*g*i^3)*B^2*x^4 + 20*(b^5*c^2*d^3*g*i^3
 + a*b^4*c*d^4*g*i^3)*B^2*x^3 + 10*(b^5*c^3*d^2*g*i^3 + 3*a*b^4*c^2*d^3*g*i
^3)*B^2*x^2 - (b^5*c^5*g*i^3 - 5*a*b^4*c^4*d*g*i^3)*B^2)*log(d*x + c)^2 + (
24*B^2*b^5*d^5*g*i^3*x^5*log(e) + 6*((15*g*i^3*log(e) - g*i^3)*b^5*c*d^4 +
(5*g*i^3*log(e) + g*i^3)*a*b^4*d^5)*B^2*x^4 + 2*(a^2*b^3*d^5*g*i^3 + (60*g*
i^3*log(e) - 11*g*i^3)*b^5*c^2*d^3 + 10*(6*g*i^3*log(e) + g*i^3)*a*b^4*c*d^
4)*B^2*x^3 + 3*(5*a^2*b^3*c*d^4*g*i^3 - a^3*b^2*d^5*g*i^3 + (20*g*i^3*log(e
) - 9*g*i^3)*b^5*c^3*d^2 + 5*(12*g*i^3*log(e) + g*i^3)*a*b^4*c^2*d^3)*B^2*x
```

```
^2 - 6*(b^5*c^4*d*g*i^3 - 10*a^2*b^3*c^2*d^3*g*i^3 + 5*a^3*b^2*c*d^4*g*i^3
- a^4*b*d^5*g*i^3 - 5*(4*g*i^3*log(e) - g*i^3)*a*b^4*c^3*d^2)*B^2*x - (6*a*
b^4*c^4*d*g*i^3 - 3*(20*g*i^3*log(e) - g*i^3)*a^2*b^3*c^3*d^2 + (60*g*i^3*l
og(e) - 23*g*i^3)*a^3*b^2*c^2*d^3 - (30*g*i^3*log(e) - 19*g*i^3)*a^4*b*c*d^
4 + (6*g*i^3*log(e) - 5*g*i^3)*a^5*d^5)*B^2)*log(b*x + a) - (24*B^2*b^5*d^5
*g*i^3*x^5*log(e) + 6*((15*g*i^3*log(e) - g*i^3)*b^5*c*d^4 + (5*g*i^3*log(e
) + g*i^3)*a*b^4*d^5)*B^2*x^4 + 2*(a^2*b^3*d^5*g*i^3 + (60*g*i^3*log(e) - 1
1*g*i^3)*b^5*c^2*d^3 + 10*(6*g*i^3*log(e) + g*i^3)*a*b^4*c*d^4)*B^2*x^3 + 3
*(5*a^2*b^3*c*d^4*g*i^3 - a^3*b^2*d^5*g*i^3 + (20*g*i^3*log(e) - 9*g*i^3)*b
^5*c^3*d^2 + 5*(12*g*i^3*log(e) + g*i^3)*a*b^4*c^2*d^3)*B^2*x^2 - 6*(b^5*c^
4*d*g*i^3 - 10*a^2*b^3*c^2*d^3*g*i^3 + 5*a^3*b^2*c*d^4*g*i^3 - a^4*b*d^5*g*
i^3 - 5*(4*g*i^3*log(e) - g*i^3)*a*b^4*c^3*d^2)*B^2*x + 6*(4*B^2*b^5*d^5*g*
i^3*x^5 + 20*B^2*a*b^4*c^3*d^2*g*i^3*x + 5*(3*b^5*c*d^4*g*i^3 + a*b^4*d^5*g
*i^3)*B^2*x^4 + 20*(b^5*c^2*d^3*g*i^3 + a*b^4*c*d^4*g*i^3)*B^2*x^3 + 10*(b^
5*c^3*d^2*g*i^3 + 3*a*b^4*c^2*d^3*g*i^3)*B^2*x^2 + (10*a^2*b^3*c^3*d^2*g*i^
3 - 10*a^3*b^2*c^2*d^3*g*i^3 + 5*a^4*b*c*d^4*g*i^3 - a^5*d^5*g*i^3)*B^2)*lo
g(b*x + a))*log(d*x + c))/(b^4*d^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a g + b g x\right) \left(c i + d i x\right)^3 \left(A + B \ln\left(\frac{e \left(a + b x\right)}{c + d x}\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)
```

```
[Out] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
```

```
[Out] Timed out
```

3.77 $\int (ci+dix)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx$

Optimal. Leaf size=420

$$\frac{Bi^3(bc-ad)^4\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^4d}-\frac{Bi^3(a+bx)(bc-ad)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^4}-\frac{Bi^3(c+dx)^2(bc}{}$$

```
[Out] 5/12*B^2*(-a*d+b*c)^3*i^3*x/b^3+1/12*B^2*(-a*d+b*c)^2*i^3*(d*x+c)^2/b^2/d+5
/12*B^2*(-a*d+b*c)^4*i^3*ln((b*x+a)/(d*x+c))/b^4/d-1/2*B*(-a*d+b*c)^3*i^3*(
b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^4-1/4*B*(-a*d+b*c)^2*i^3*(d*x+c)^2*(A+
B*ln(e*(b*x+a)/(d*x+c)))/b^2/d-1/6*B*(-a*d+b*c)*i^3*(d*x+c)^3*(A+B*ln(e*(b*
x+a)/(d*x+c)))/b/d+1/4*i^3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d+11/12*
B^2*(-a*d+b*c)^4*i^3*ln(d*x+c)/b^4/d+1/2*B*(-a*d+b*c)^4*i^3*(A+B*ln(e*(b*x+
a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/d-1/2*B^2*(-a*d+b*c)^4*i^3*polyl
og(2,b*(d*x+c)/d/(b*x+a))/b^4/d
```

Rubi [A] time = 0.62, antiderivative size = 503, normalized size of antiderivative = 1.20, number of steps used = 24, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.406$, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$-\frac{B^2i^3(bc-ad)^4\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{2b^4d}-\frac{Bi^3(bc-ad)^4\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2b^4d}-\frac{Bi^3(c+dx)^2(bc-ad)^2\left(B\right.}{4b^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] -(A*B*(b*c - a*d)^3*i^3*x)/(2*b^3) + (5*B^2*(b*c - a*d)^3*i^3*x)/(12*b^3) +
 (B^2*(b*c - a*d)^2*i^3*(c + d*x)^2)/(12*b^2*d) + (5*B^2*(b*c - a*d)^4*i^3*
Log[a + b*x])/(12*b^4*d) + (B^2*(b*c - a*d)^4*i^3*Log[a + b*x]^2)/(4*b^4*d)
 - (B^2*(b*c - a*d)^3*i^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(2*b^4) -
 (B*(b*c - a*d)^2*i^3*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(4*
b^2*d) - (B*(b*c - a*d)*i^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]
))/(6*b*d) - (B*(b*c - a*d)^4*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c
+ d*x)]))/(2*b^4*d) + (i^3*(c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])
^2)/(4*d) + (B^2*(b*c - a*d)^4*i^3*Log[c + d*x])/(2*b^4*d) - (B^2*(b*c - a*
d)^4*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(2*b^4*d) - (B^2*(b*c
 - a*d)^4*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(2*b^4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (77c+77dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx=\frac{456533(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4d}-\frac{B\int\frac{35153041(bc-ad)(c+dx)}{a+b}}{154}$$

$$=\frac{456533(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4d}-\frac{(456533B(bc-ad))\int}{}$$

$$=\frac{456533(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4d}-\frac{(456533B(bc-ad))\int}{}$$

$$=\frac{456533(c+dx)^4\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4d}-\frac{(456533B(bc-ad))\int(}{}$$

$$=-\frac{456533AB(bc-ad)^3x}{2b^3}-\frac{456533B(bc-ad)^2(c+dx)^2\left(A+B\,\mathrm{lo}\right.}{4b^2d}$$

$$=-\frac{456533AB(bc-ad)^3x}{2b^3}-\frac{456533B^2(bc-ad)^3(a+bx)\log\left(\frac{e(a+b}{c+d}\right.}{2b^4}$$

$$=-\frac{456533AB(bc-ad)^3x}{2b^3}-\frac{456533B^2(bc-ad)^3(a+bx)\log\left(\frac{e(a+b}{c+d}\right.}{2b^4}$$

$$=-\frac{456533AB(bc-ad)^3x}{2b^3}+\frac{2282665B^2(bc-ad)^3x}{12b^3}+\frac{456533B^2(b}{}$$

$$=-\frac{456533AB(bc-ad)^3x}{2b^3}+\frac{2282665B^2(bc-ad)^3x}{12b^3}+\frac{456533B^2(b}{}$$

$$=-\frac{456533AB(bc-ad)^3x}{2b^3}+\frac{2282665B^2(bc-ad)^3x}{12b^3}+\frac{456533B^2(b}{}$$

$$=-\frac{456533AB(bc-ad)^3x}{2b^3}+\frac{2282665B^2(bc-ad)^3x}{12b^3}+\frac{456533B^2(b}{}$$

Mathematica [A] time = 0.31, size = 389, normalized size = 0.93

$$\frac{i^3\left((c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2-\frac{B(bc-ad)\left(2b^3(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+3b^2(c+dx)^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+6(bc-ad)^3\log(a+\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2,x]
```

```
[Out] (i^3*((c + d*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - (B*(b*c - a*d)*(
6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*(b*d*x + (b*c - a*d)*Log[a + b*
x]) - B*(b*c - a*d)*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^
2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)
] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*
b^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6*(b*c - a*d)^3*Log[
a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 6*B*(b*c - a*d)^3*Log[c + d
*x] - 3*B*(b*c - a*d)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(
b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(3*b^4)))/(4*d
)
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2d^3i^3x^3 + 3\,A^2cd^2i^3x^2 + 3\,A^2c^2di^3x + A^2c^3i^3 + \left(B^2d^3i^3x^3 + 3\,B^2cd^2i^3x^2 + 3\,B^2c^2di^3x + B^2c^3i^3\right)\log\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="fricas
")
```

```
[Out] integral(A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c^
3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c^
3*i^3)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i^
3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.97, size = 0, normalized size = 0.00

$$\int (dix + ci)^3 \left(B\ln\left(\frac{(bx+a)\,e}{dx+c}\right) + A\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2,x)
```

maxima [B] time = 2.19, size = 1789, normalized size = 4.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2,x, algorithm="maxima
")
```

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

```
+ c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2))*A
*B*c*d^2*i^3 + 1/12*(6*x^4*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 6*a^4*log
(b*x + a)/b^4 + 6*c^4*log(d*x + c)/d^4 - (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3
*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))*A*B*d^3*
i^3 + A^2*c^3*i^3*x - 1/12*(26*a*b^2*c^3*d*i^3 - 21*a^2*b*c^2*d^2*i^3 + 6*a
^3*c*d^3*i^3 + (6*i^3*log(e) - 11*i^3)*b^3*c^4)*B^2*log(d*x + c)/(b^3*d) -
1/2*(b^4*c^4*i^3 - 4*a*b^3*c^3*d*i^3 + 6*a^2*b^2*c^2*d^2*i^3 - 4*a^3*b*c*d^
3*i^3 + a^4*d^4*i^3)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dil
og(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^4*d) + 1/12*(3*B^2*b^4*d^4*i^3*x^4*l
og(e)^2 + 2*(a*b^3*d^4*i^3*log(e) + (6*i^3*log(e)^2 - i^3*log(e))*b^4*c*d^3
)*B^2*x^3 + ((18*i^3*log(e)^2 - 9*i^3*log(e) + i^3)*b^4*c^2*d^2 + 2*(6*i^3*
log(e) - i^3)*a*b^3*c*d^3 - (3*i^3*log(e) - i^3)*a^2*b^2*d^4)*B^2*x^2 + ((1
2*i^3*log(e)^2 - 18*i^3*log(e) + 7*i^3)*b^4*c^3*d + (36*i^3*log(e) - 19*i^3
)*a*b^3*c^2*d^2 - (24*i^3*log(e) - 17*i^3)*a^2*b^2*c*d^3 + (6*i^3*log(e) -
5*i^3)*a^3*b*d^4)*B^2*x + 3*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3
+ 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + (4*a*b^3*c^3*d*i^3 -
6*a^2*b^2*c^2*d^2*i^3 + 4*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B^2)*log(b*x + a)^
2 + 3*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^
3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*log(d*x + c)^2 + (6*B^2*b^
4*d^4*i^3*x^4*log(e) + 2*(a*b^3*d^4*i^3 + (12*i^3*log(e) - i^3)*b^4*c*d^3)*
B^2*x^3 + 3*(4*a*b^3*c*d^3*i^3 - a^2*b^2*d^4*i^3 + 3*(4*i^3*log(e) - i^3)*b
^4*c^2*d^2)*B^2*x^2 + 6*(6*a*b^3*c^2*d^2*i^3 - 4*a^2*b^2*c*d^3*i^3 + a^3*b*
d^4*i^3 + (4*i^3*log(e) - 3*i^3)*b^4*c^3*d)*B^2*x + (6*(4*i^3*log(e) - 3*i^
3)*a*b^3*c^3*d - 9*(4*i^3*log(e) - 5*i^3)*a^2*b^2*c^2*d^2 + 2*(12*i^3*log(e
) - 19*i^3)*a^3*b*c*d^3 - (6*i^3*log(e) - 11*i^3)*a^4*d^4)*B^2)*log(b*x + a
) - (6*B^2*b^4*d^4*i^3*x^4*log(e) + 2*(a*b^3*d^4*i^3 + (12*i^3*log(e) - i^3
)*b^4*c*d^3)*B^2*x^3 + 3*(4*a*b^3*c*d^3*i^3 - a^2*b^2*d^4*i^3 + 3*(4*i^3*lo
g(e) - i^3)*b^4*c^2*d^2)*B^2*x^2 + 6*(6*a*b^3*c^2*d^2*i^3 - 4*a^2*b^2*c*d^3
*i^3 + a^3*b*d^4*i^3 + (4*i^3*log(e) - 3*i^3)*b^4*c^3*d)*B^2*x + 6*(B^2*b^4
*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*
b^4*c^3*d*i^3*x + (4*a*b^3*c^3*d*i^3 - 6*a^2*b^2*c^2*d^2*i^3 + 4*a^3*b*c*d^
3*i^3 - a^4*d^4*i^3)*B^2)*log(b*x + a))*log(d*x + c))/(b^4*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,i+d\,i\,x)^3\,{\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2,x)
[Out] int((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2,x)
[Out] Timed out
```

3.78 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ag+bgx}\,dx$

Optimal. Leaf size=712

$$\frac{2Bi^3(bc-ad)^3\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g}+\frac{di^3(a+bx)(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{b^4g}-\frac{5Bdi^3(a+bx)(}{}$$

```
[Out] 1/3*B^2*d*(-a*d+b*c)^2*i^3*x/b^3/g+1/3*B^2*(-a*d+b*c)^3*i^3*ln((b*x+a)/(d*x
+c))/b^4/g-5/3*B*d*(-a*d+b*c)^2*i^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^4
/g-1/3*B*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^2/g+2*B*(-a
*d+b*c)^3*i^3*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^4/g+d*
(-a*d+b*c)^2*i^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^4/g+1/2*(-a*d+b*c)
*i^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^2/g+1/3*i^3*(d*x+c)^3*(A+B*l
n(e*(b*x+a)/(d*x+c)))^2/b/g+2*B^2*(-a*d+b*c)^3*i^3*ln(d*x+c)/b^4/g+5/3*B*(-
a*d+b*c)^3*i^3*(A+B*ln(e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g-
(-a*d+b*c)^3*i^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^
4/g+2*B^2*(-a*d+b*c)^3*i^3*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/g-5/3*B^2*(-a
*d+b*c)^3*i^3*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g+2*B*(-a*d+b*c)^3*i^3*(A+
B*ln(e*(b*x+a)/(d*x+c)))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g+2*B^2*(-a*d+b
*c)^3*i^3*polylog(3,b*(d*x+c)/d/(b*x+a))/b^4/g
```

Rubi [B] time = 5.69, antiderivative size = 1868, normalized size of antiderivative = 2.62, number of steps used = 106, number of rules used = 28, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2440, 2434, 2433, 2375, 2317, 2374, 6589, 2499, 2302, 30, 2396, 2525, 2486, 31, 43}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x),
x]
```

```
[Out] (-5*A*B*d*(b*c - a*d)^2*i^3*x)/(3*b^3*g) + (B^2*d*(b*c - a*d)^2*i^3*x)/(3*b
^3*g) + (B^2*(b*c - a*d)^3*i^3*Log[a + b*x])/(3*b^4*g) - (a*B^2*d*(b*c - a*
d)^2*i^3*Log[a + b*x]^2)/(b^4*g) + (5*B^2*(b*c - a*d)^3*i^3*Log[a + b*x]^2)
/(6*b^4*g) - (A*B*(b*c - a*d)^3*i^3*Log[g*(a + b*x)]^2)/(b^4*g) + (B^2*(b*c
 - a*d)^3*i^3*Log[g*(a + b*x)]^3)/(3*b^4*g) - (B^2*(b*c - a*d)^3*i^3*Log[a
+ b*x]^2*Log[-c - d*x])/(b^4*g) + (2*B^2*(b*c - a*d)^3*i^3*Log[a + b*x]*Log
[g*(a + b*x)]*Log[-c - d*x])/(b^4*g) - (B^2*(b*c - a*d)^3*i^3*Log[g*(a + b*
x)]^2*Log[-c - d*x])/(b^4*g) + (B^2*(b*c - a*d)^3*i^3*Log[-((d*(a + b*x))/(
b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/(b^4*g) - (B^2*(b*c - a*d)^3*i^3*Log[g*
(a + b*x)]*Log[(c + d*x)^(-1)]^2)/(b^4*g) - (5*B^2*d*(b*c - a*d)^2*i^3*(a +
 b*x)*Log[(e*(a + b*x))/(c + d*x)])/(3*b^4*g) - (B*(b*c - a*d)*i^3*(c + d*x
)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^2*g) + (2*a*B*d*(b*c - a*d)^
2*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^4*g) - (5*B*(b*
c - a*d)^3*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*b^4*g)
 + (d*(b*c - a*d)^2*i^3*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^3*g) +
 ((b*c - a*d)*i^3*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*b^
2*g) + (i^3*(c + d*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(3*b*g) + (
5*B^2*(b*c - a*d)^3*i^3*Log[c + d*x])/(3*b^4*g) + (2*B^2*c*(b*c - a*d)^2*i^
3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^3*g) - (2*B*c*(b*c - a
*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(b^3*g) - (B^2
*c*(b*c - a*d)^2*i^3*Log[c + d*x]^2)/(b^3*g) + (2*a*B^2*d*(b*c - a*d)^2*i^3
*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g) - (5*B^2*(b*c - a*d)^
3*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(3*b^4*g) + (B^2*(b*c -
a*d)^3*i^3*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g) + (B^2*(b
```

```
*c - a*d)^3*i^3*Log[g*(a + b*x)]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g)
+ ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[a*g + b*g*x
])/(b^4*g) + (2*A*B*(b*c - a*d)^3*i^3*Log[(b*(c + d*x))/(b*c - a*d)]*Log[a*
g + b*g*x])/(b^4*g) - (2*B^2*(b*c - a*d)^3*i^3*(Log[a + b*x] + Log[(c + d*x
)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[(b*(c + d*x))/(b*c - a*d)]*Log[
a*g + b*g*x])/(b^4*g) - (B^2*(b*c - a*d)^3*i^3*Log[(e*(a + b*x))/(c + d*x)]
*Log[a*g + b*g*x]^2)/(b^4*g) - (B^2*(b*c - a*d)^3*i^3*Log[(b*(c + d*x))/(b*
c - a*d)]*Log[a*g + b*g*x]^2)/(b^4*g) + (2*a*B^2*d*(b*c - a*d)^2*i^3*PolyLo
g[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g) + (2*A*B*(b*c - a*d)^3*i^3*Poly
Log[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g) - (5*B^2*(b*c - a*d)^3*i^3*Po
lyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(3*b^4*g) + (2*B^2*(b*c - a*d)^3*i^
3*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g) - (2*B^2*(
b*c - a*d)^3*i^3*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c
 + d*x)])*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g) + (2*B^2*c*(b*c
 - a*d)^2*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^3*g) - (2*B^2*(b*c
- a*d)^3*i^3*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^
4*g) - (2*B^2*(b*c - a*d)^3*i^3*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/(
b^4*g) - (2*B^2*(b*c - a*d)^3*i^3*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/(b
^4*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(78c+78dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ag+bgx}\,dx = \int\left(\frac{474552d(bc-ad)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g} + \frac{6084d(bc-ad)(78\right.$$

$$= \frac{\left(474552(bc-ad)^3\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ag+bgx}\,dx}{b^3} + \frac{(78d)\int(78c+78dx)^2\left(\right.}{}$$

$$= \frac{474552d(bc-ad)^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g} + \frac{237276(bc-ad)(c+}{}$$

$$= \frac{474552d(bc-ad)^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g} + \frac{237276(bc-ad)(c+}{}$$

$$= \frac{474552d(bc-ad)^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g} + \frac{237276(bc-ad)(c+}{}$$

$$= \frac{474552d(bc-ad)^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g} + \frac{237276(bc-ad)(c+}{}$$

$$= -\frac{790920ABd(bc-ad)^2x}{b^3g} - \frac{158184B(bc-ad)(c+dx)^2\left(A+B\log\left(\right.\right.}{b^2g}$$

$$= -\frac{790920ABd(bc-ad)^2x}{b^3g} - \frac{790920B^2d(bc-ad)^2(a+bx)\log\left(\frac{e(a+b}{c+d}\right.}{b^4g}$$

$$= -\frac{790920ABd(bc-ad)^2x}{b^3g} - \frac{790920B^2d(bc-ad)^2(a+bx)\log\left(\frac{e(a+b}{c+d}\right.}{b^4g}$$

$$= -\frac{790920ABd(bc-ad)^2x}{b^3g} + \frac{158184B^2d(bc-ad)^2x}{b^3g} + \frac{158184B^2(bc}{}$$

$$= -\frac{790920ABd(bc-ad)^2x}{b^3g} + \frac{158184B^2d(bc-ad)^2x}{b^3g} + \frac{158184B^2(bc}{}$$

$$= -\frac{790920ABd(bc-ad)^2x}{b^3g} + \frac{158184B^2d(bc-ad)^2x}{b^3g} + \frac{158184B^2(bc}{}$$

$$= -\frac{790920ABd(bc-ad)^2x}{b^3g} + \frac{158184B^2d(bc-ad)^2x}{b^3g} + \frac{158184B^2(bc}{}$$

$$= -\frac{790920ABd(bc-ad)^2x}{b^3g} + \frac{158184B^2d(bc-ad)^2x}{b^3g} + \frac{158184B^2(bc}{}$$

$$= -\frac{790920ABd(bc-ad)^2x}{b^3g} + \frac{158184B^2d(bc-ad)^2x}{b^3g} + \frac{158184B^2(bc}{}$$

$$= -\frac{790920ABd(bc-ad)^2x}{b^3g} + \frac{158184B^2d(bc-ad)^2x}{b^3g} + \frac{158184B^2(bc}{}$$

Mathematica [B] time = 4.14, size = 3984, normalized size = 5.60

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x),x]
```

```
[Out] (i^3*(108*A*b^3*B*c^3 - 216*a*A*b^2*B*c^2*d - 12*a*b^2*B^2*c^2*d + 144*a^2*
A*b*B*c*d^2 - 18*a^2*b*B^2*c*d^2 - 36*a^3*A*B*d^3 - 36*a^3*B^2*d^3 + 54*A^2
*b^3*c^2*d*x - 42*A*b^3*B*c^2*d*x + 6*b^3*B^2*c^2*d*x - 54*a*A^2*b^2*c*d^2*
x + 72*a*A*b^2*B*c*d^2*x - 12*a*b^2*B^2*c*d^2*x + 18*a^2*A^2*b*d^3*x - 30*a
^2*A*b*B*d^3*x + 6*a^2*b*B^2*d^3*x + 27*A^2*b^3*c*d^2*x^2 - 6*A*b^3*B*c*d^2
*x^2 - 9*a*A^2*b^2*d^3*x^2 + 6*a*A*b^2*B*d^3*x^2 + 6*A^2*b^3*d^3*x^3 + 108*
a*A*b^2*B*c^2*d*Log[a/b + x] + 12*a*b^2*B^2*c^2*d*Log[a/b + x] - 108*a^2*A*
b*B*c*d^2*Log[a/b + x] - 18*a^2*b*B^2*c*d^2*Log[a/b + x] + 36*a^3*A*B*d^3*L
og[a/b + x] - 13*a^3*B^2*d^3*Log[a/b + x] + 18*A*b^3*B*c^3*Log[a/b + x]^2 -
 54*a*A*b^2*B*c^2*d*Log[a/b + x]^2 + 54*a^2*A*b*B*c*d^2*Log[a/b + x]^2 - 18
*a^3*A*B*d^3*Log[a/b + x]^2 - 3*a^3*B^2*d^3*Log[a/b + x]^2 + 12*a^3*B^2*d^3
*Log[a/b + x]^3 - 108*A*b^3*B*c^3*Log[c/d + x] - 22*b^3*B^2*c^3*Log[c/d + x
] + 108*a*A*b^2*B*c^2*d*Log[c/d + x] - 27*a*b^2*B^2*c^2*d*Log[c/d + x] - 36
*a^2*A*b*B*c*d^2*Log[c/d + x] - 36*a^3*B^2*d^3*Log[c/d + x] + 36*a^2*b*B^2*
c*d^2*Log[a/b + x]*Log[c/d + x] - 30*a^3*B^2*d^3*Log[a/b + x]*Log[c/d + x]
+ 6*b^3*B^2*c^3*Log[c/d + x]^2 + 9*a*b^2*B^2*c^2*d*Log[c/d + x]^2 - 18*a^2*
b*B^2*c*d^2*Log[c/d + x]^2 + 18*A^2*b^3*c^3*Log[a + b*x] - 54*a*A^2*b^2*c^2
*d*Log[a + b*x] + 54*a^2*A^2*b*c*d^2*Log[a + b*x] - 54*a^2*A*b*B*c*d^2*Log[
a + b*x] + 6*a^2*b*B^2*c*d^2*Log[a + b*x] - 18*a^3*A^2*d^3*Log[a + b*x] + 3
0*a^3*A*B*d^3*Log[a + b*x] + 13*a^3*B^2*d^3*Log[a + b*x] - 36*A*b^3*B*c^3*L
og[a/b + x]*Log[a + b*x] + 108*a*A*b^2*B*c^2*d*Log[a/b + x]*Log[a + b*x] -
108*a^2*A*b*B*c*d^2*Log[a/b + x]*Log[a + b*x] + 36*a^3*A*B*d^3*Log[a/b + x]
*Log[a + b*x] - 30*a^3*B^2*d^3*Log[a/b + x]*Log[a + b*x] - 18*a^3*B^2*d^3*L
og[a/b + x]^2*Log[a + b*x] + 36*A*b^3*B*c^3*Log[c/d + x]*Log[a + b*x] - 108
*a*A*b^2*B*c^2*d*Log[c/d + x]*Log[a + b*x] + 108*a^2*A*b*B*c*d^2*Log[c/d +
x]*Log[a + b*x] - 36*a^3*A*B*d^3*Log[c/d + x]*Log[a + b*x] + 30*a^3*B^2*d^3
*Log[c/d + x]*Log[a + b*x] + 36*a^3*B^2*d^3*Log[a/b + x]*Log[c/d + x]*Log[a
 + b*x] - 18*a^3*B^2*d^3*Log[c/d + x]^2*Log[a + b*x] - 36*A*b^3*B*c^3*Log[c
/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 108*a*A*b^2*B*c^2*d*Log[c/d + x
]*Log[(d*(a + b*x))/(-(b*c) + a*d)] - 108*a^2*A*b*B*c*d^2*Log[c/d + x]*Log[
(d*(a + b*x))/(-(b*c) + a*d)] + 36*a^3*A*B*d^3*Log[c/d + x]*Log[(d*(a + b*x
))/(-(b*c) + a*d)] - 36*a^3*B^2*d^3*Log[a/b + x]*Log[c/d + x]*Log[(d*(a + b
*x))/(-(b*c) + a*d)] + 18*a^3*B^2*d^3*Log[c/d + x]^2*Log[(d*(a + b*x))/(-(b
*c) + a*d)] - 54*b^3*B^2*c^3*Log[((b*c - a*d)*e)/(c + d*x)] + 108*a*b^2*B^2
*c^2*d*Log[((b*c - a*d)*e)/(c + d*x)] - 54*a^2*b*B^2*c*d^2*Log[((b*c - a*d)
*e)/(c + d*x)] - 54*a*b^2*B^2*c^2*d*Log[(e*(a + b*x))/(c + d*x)] + 90*a^2*b
*B^2*c*d^2*Log[(e*(a + b*x))/(c + d*x)] - 36*a^3*B^2*d^3*Log[(e*(a + b*x))/
(c + d*x)] + 108*A*b^3*B*c^2*d*x*Log[(e*(a + b*x))/(c + d*x)] - 42*b^3*B^2*
c^2*d*x*Log[(e*(a + b*x))/(c + d*x)] - 108*a*A*b^2*B*c*d^2*x*Log[(e*(a + b*
x))/(c + d*x)] + 72*a*b^2*B^2*c*d^2*x*Log[(e*(a + b*x))/(c + d*x)] + 36*a^2
*A*b*B*d^3*x*Log[(e*(a + b*x))/(c + d*x)] - 30*a^2*b*B^2*d^3*x*Log[(e*(a +
b*x))/(c + d*x)] + 54*A*b^3*B*c*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)] - 6*b^
3*B^2*c*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)] - 18*a*A*b^2*B*d^3*x^2*Log[(e*
(a + b*x))/(c + d*x)] + 6*a*b^2*B^2*d^3*x^2*Log[(e*(a + b*x))/(c + d*x)] +
12*A*b^3*B*d^3*x^3*Log[(e*(a + b*x))/(c + d*x)] + 36*a^3*B^2*d^3*Log[a/b +
x]*Log[(e*(a + b*x))/(c + d*x)] - 18*a^3*B^2*d^3*Log[a/b + x]^2*Log[(e*(a +
 b*x))/(c + d*x)] - 36*a^2*b*B^2*c*d^2*Log[c/d + x]*Log[(e*(a + b*x))/(c +
d*x)] + 36*A*b^3*B*c^3*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 108*a*A*
b^2*B*c^2*d*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 108*a^2*A*b*B*c*d^2
*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 36*a^3*A*B*d^3*Log[a + b*x]*Lo
g[(e*(a + b*x))/(c + d*x)] + 30*a^3*B^2*d^3*Log[a + b*x]*Log[(e*(a + b*x))/
```

```
(c + d*x)] + 36*a^3*B^2*d^3*Log[a/b + x]*Log[a + b*x]*Log[(e*(a + b*x))/(c
+ d*x)] - 36*a^3*B^2*d^3*Log[c/d + x]*Log[a + b*x]*Log[(e*(a + b*x))/(c + d
*x)] + 36*a^3*B^2*d^3*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[(e
*(a + b*x))/(c + d*x)] + 54*a*b^2*B^2*c^2*d*Log[(e*(a + b*x))/(c + d*x)]^2
- 81*a^2*b*B^2*c*d^2*Log[(e*(a + b*x))/(c + d*x)]^2 + 54*b^3*B^2*c^2*d*x*Lo
g[(e*(a + b*x))/(c + d*x)]^2 - 54*a*b^2*B^2*c*d^2*x*Log[(e*(a + b*x))/(c +
d*x)]^2 + 18*a^2*b*B^2*d^3*x*Log[(e*(a + b*x))/(c + d*x)]^2 + 27*b^3*B^2*c*
d^2*x^2*Log[(e*(a + b*x))/(c + d*x)]^2 - 9*a*b^2*B^2*d^3*x^2*Log[(e*(a + b*
x))/(c + d*x)]^2 + 6*b^3*B^2*d^3*x^3*Log[(e*(a + b*x))/(c + d*x)]^2 - 18*b^
3*B^2*c^3*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(e*(a + b*x))/(c + d*x)]^2
- 18*a^3*B^2*d^3*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2 - 18*a*b^2*B^2
*c^2*d*Log[(e*(a + b*x))/(c + d*x)]^3 + 18*a^2*b*B^2*c*d^2*Log[(e*(a + b*x)
)/(c + d*x)]^3 + 42*A*b^3*B*c^3*Log[c + d*x] + 4*b^3*B^2*c^3*Log[c + d*x] -
 18*a*A*b^2*B*c^2*d*Log[c + d*x] + 15*a*b^2*B^2*c^2*d*Log[c + d*x] + 66*a^2
*b*B^2*c*d^2*Log[c + d*x] + 12*b^3*B^2*c^3*Log[a/b + x]*Log[c + d*x] + 18*a
*b^2*B^2*c^2*d*Log[a/b + x]*Log[c + d*x] - 12*b^3*B^2*c^3*Log[c/d + x]*Log[
c + d*x] - 18*a*b^2*B^2*c^2*d*Log[c/d + x]*Log[c + d*x] - 12*b^3*B^2*c^3*Lo
g[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 18*a*b^2*B^2*c^2*d*Log[(e*(a + b*
x))/(c + d*x)]*Log[c + d*x] - 12*b^3*B^2*c^3*Log[a/b + x]*Log[(b*(c + d*x))
/(b*c - a*d)] - 18*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*
d)] - 36*a^2*b*B^2*c*d^2*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + 66*a
^3*B^2*d^3*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] - 18*a^3*B^2*d^3*Log
[a/b + x]^2*Log[(b*(c + d*x))/(b*c - a*d)] + 54*b^3*B^2*c^3*Log[(e*(a + b*x
))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 216*a*b^2*B^2*c^2*d*Log[(e*(
a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 162*a^2*b*B^2*c*d^2*L
og[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 54*a*b^2*B^2*c
^2*d*Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - 54*a^2
*b*B^2*c*d^2*Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)]
- 6*B^2*(2*b^3*c^3 + 3*a*b^2*c^2*d + 6*a^2*b*c*d^2 - 11*a^3*d^3 + 6*a^3*d^3
*Log[a/b + x])*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + 54*b*B^2*c*(b*c -
 a*d)*(b*c - 3*a*d + 2*a*d*Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (d*(a +
 b*x))/(b*(c + d*x))] - 36*A*b^3*B*c^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
] + 108*a*A*b^2*B*c^2*d*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 108*a^2*A*b
*B*c*d^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 36*a^3*A*B*d^3*PolyLog[2,
(b*(c + d*x))/(b*c - a*d)] - 36*a^3*B^2*d^3*Log[a/b + x]*PolyLog[2, (b*(c +
 d*x))/(b*c - a*d)] + 36*a^3*B^2*d^3*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2
, (b*(c + d*x))/(b*c - a*d)] + 36*b^3*B^2*c^3*Log[(e*(a + b*x))/(c + d*x)]*
PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] + 36*a^3*B^2*d^3*PolyLog[3, (d*(a +
 b*x))/(-(b*c) + a*d)] - 108*a*b^2*B^2*c^2*d*PolyLog[3, (d*(a + b*x))/(b*(c
 + d*x))] + 108*a^2*b*B^2*c*d^2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] + 3
6*a^3*B^2*d^3*PolyLog[3, (b*(c + d*x))/(b*c - a*d)] + 36*b^3*B^2*c^3*PolyLo
g[3, (b*(c + d*x))/(d*(a + b*x))]))/(18*b^4*g)
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2d^3i^3x^3 + 3\,A^2cd^2i^3x^2 + 3\,A^2c^2di^3x + A^2c^3i^3 + \left(B^2d^3i^3x^3 + 3\,B^2cd^2i^3x^2 + 3\,B^2c^2di^3x + B^2c^3i^3\right)\log\left(\right.}{bgx + ag}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algor
ithm="fricas")
```

```
[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c
^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c
^3*i^3)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i
^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)))/(b*
g*x + a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.32, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^3 \left(B\ln\left(\frac{(bx+a)e}{dx+c}\right)+A\right)^2}{bgx+ag}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g),x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g),x, algor
ithm="maxima")
```

```
[Out] 3*A^2*c^2*d*i^3*(x/(b*g) - a*log(b*x + a)/(b^2*g)) - 1/6*A^2*d^3*i^3*(6*a^3
*log(b*x + a)/(b^4*g) - (2*b^2*x^3 - 3*a*b*x^2 + 6*a^2*x)/(b^3*g)) + 3/2*A^
2*c*d^2*i^3*(2*a^2*log(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A^2*c^
3*i^3*log(b*g*x + a*g)/(b*g) + 1/6*(2*B^2*b^3*d^3*i^3*x^3 + 3*(3*b^3*c*d^2*
i^3 - a*b^2*d^3*i^3)*B^2*x^2 + 6*(3*b^3*c^2*d*i^3 - 3*a*b^2*c*d^2*i^3 + a^2
*b*d^3*i^3)*B^2*x + 6*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3
- a^3*d^3*i^3)*B^2*log(b*x + a))*log(d*x + c)^2/(b^4*g) - integrate(-1/3*(3
*B^2*b^4*c^4*i^3*log(e)^2 + 6*A*B*b^4*c^4*i^3*log(e) + 3*(B^2*b^4*d^4*i^3*l
og(e)^2 + 2*A*B*b^4*d^4*i^3*log(e))*x^4 + 12*(B^2*b^4*c*d^3*i^3*log(e)^2 +
2*A*B*b^4*c*d^3*i^3*log(e))*x^3 + 18*(B^2*b^4*c^2*d^2*i^3*log(e)^2 + 2*A*B*
b^4*c^2*d^2*i^3*log(e))*x^2 + 3*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*
x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*
log(b*x + a)^2 + 12*(B^2*b^4*c^3*d*i^3*log(e)^2 + 2*A*B*b^4*c^3*d*i^3*log(e
))*x + 6*(B^2*b^4*c^4*i^3*log(e) + A*B*b^4*c^4*i^3 + (B^2*b^4*d^4*i^3*log(e
) + A*B*b^4*d^4*i^3)*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e) + A*B*b^4*c*d^3*i^3)
*x^3 + 6*(B^2*b^4*c^2*d^2*i^3*log(e) + A*B*b^4*c^2*d^2*i^3)*x^2 + 4*(B^2*b^
4*c^3*d*i^3*log(e) + A*B*b^4*c^3*d*i^3)*x)*log(b*x + a) - (6*B^2*b^4*c^4*i^
3*log(e) + 6*A*B*b^4*c^4*i^3 + 2*(3*A*B*b^4*d^4*i^3 + (3*i^3*log(e) + i^3)*
B^2*b^4*d^4)*x^4 + (24*A*B*b^4*c*d^3*i^3 - (a*b^3*d^4*i^3 - 3*(8*i^3*log(e)
 + 3*i^3)*b^4*c*d^3)*B^2)*x^3 + 3*(12*A*B*b^4*c^2*d^2*i^3 - (3*a*b^3*c*d^3*
i^3 - a^2*b^2*d^4*i^3 - 6*(2*i^3*log(e) + i^3)*b^4*c^2*d^2)*B^2)*x^2 + 6*(4
*A*B*b^4*c^3*d*i^3 + (4*b^4*c^3*d*i^3*log(e) + 3*a*b^3*c^2*d^2*i^3 - 3*a^2*
b^2*c*d^3*i^3 + a^3*b*d^4*i^3)*B^2)*x + 6*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*
c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + (5*b^4*c^3*d*i^3 - 3*a*b^3*c^2*
d^2*i^3 + 3*a^2*b^2*c*d^3*i^3 - a^3*b*d^4*i^3)*B^2*x + (b^4*c^4*i^3 + a*b^3
*c^3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 3*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B^2)*
log(b*x + a))*log(d*x + c))/(b^5*d*g*x^2 + a*b^4*c*g + (b^5*c*g + a*b^4*d*g
)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)^2}{a\,g+b\,g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x),
x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x),
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g),x)
```

```
[Out] Timed out
```

3.79 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=692

$$\frac{2d^2i^3(a+bx)(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{b^4g^2}-\frac{Bd^2i^3(a+bx)(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^2}+\frac{6Bdi^3(bc-ad)^2\text{L}}{}$$

```
[Out] -2*B^2*(-a*d+b*c)^2*i^3*(d*x+c)/b^3/g^2/(b*x+a)-B*d^2*(-a*d+b*c)*i^3*(b*x+a
)*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^4/g^2-2*B*(-a*d+b*c)^2*i^3*(d*x+c)*(A+B*ln(
e*(b*x+a)/(d*x+c)))/b^3/g^2/(b*x+a)+4*B*d*(-a*d+b*c)^2*i^3*ln((-a*d+b*c)/b/
(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/b^4/g^2+2*d^2*(-a*d+b*c)*i^3*(b*x+a)*(
A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^4/g^2-(-a*d+b*c)^2*i^3*(d*x+c)*(A+B*ln(e*(b*
x+a)/(d*x+c)))^2/b^3/g^2/(b*x+a)+1/2*d*i^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x
+c)))^2/b^2/g^2+B^2*d*(-a*d+b*c)^2*i^3*ln(d*x+c)/b^4/g^2+B*d*(-a*d+b*c)^2*i
^3*(A+B*ln(e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^2-3*d*(-a*d+
b*c)^2*i^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^2+
4*B^2*d*(-a*d+b*c)^2*i^3*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/g^2-B^2*d*(-a*d
+b*c)^2*i^3*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^2+6*B*d*(-a*d+b*c)^2*i^3*(
A+B*ln(e*(b*x+a)/(d*x+c)))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^2+6*B^2*d*(
-a*d+b*c)^2*i^3*polylog(3,b*(d*x+c)/d/(b*x+a))/b^4/g^2
```

Rubi [B] time = 4.82, antiderivative size = 1751, normalized size of antiderivative = 2.53, number of steps used = 90, number of rules used = 23, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.548, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^
2,x]
```

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

```
b*x))/(c + d*x)])*Log[c + d*x])/(b^4*g^2) + (B^2*c^2*d*i^3*Log[c + d*x]^2)/
(2*b^2*g^2) - (B^2*c*d*(3*b*c - 2*a*d)*i^3*Log[c + d*x]^2)/(b^3*g^2) + (B^2
*d*(b*c - a*d)^2*i^3*Log[c + d*x]^2)/(b^4*g^2) - (a^2*B^2*d^3*i^3*Log[a + b
*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g^2) + (2*a*B^2*d^2*(3*b*c - 2*a*d
)*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g^2) + (6*A*B*d*(b*
c - a*d)^2*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g^2) - (2*
B^2*d*(b*c - a*d)^2*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g
^2) - (a^2*B^2*d^3*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^2)
+ (2*a*B^2*d^2*(3*b*c - 2*a*d)*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))]
)/(b^4*g^2) + (6*A*B*d*(b*c - a*d)^2*i^3*PolyLog[2, -((d*(a + b*x))/(b*c -
a*d))])/(b^4*g^2) - (2*B^2*d*(b*c - a*d)^2*i^3*PolyLog[2, -((d*(a + b*x))/(
b*c - a*d))])/(b^4*g^2) - (B^2*c^2*d*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*
d)])/(b^2*g^2) + (2*B^2*c*d*(3*b*c - 2*a*d)*i^3*PolyLog[2, (b*(c + d*x))/(b
*c - a*d)])/(b^3*g^2) - (2*B^2*d*(b*c - a*d)^2*i^3*PolyLog[2, (b*(c + d*x))
/(b*c - a*d)])/(b^4*g^2) + (6*B^2*d*(b*c - a*d)^2*i^3*Log[(e*(a + b*x))/(c
+ d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^2) + (6*B^2*d*(b*
c - a*d)^2*i^3*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
```

```
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
```

```
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
```

]

Rubi steps

$$\int \frac{(79c+79dx)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^2}\,dx = \int \left(\frac{493039d^2(3bc-2ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^2} + \frac{493039d^3x\,(A}{}\right.$$

$$= \frac{\left(493039d^3\right)\int x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx}{b^2g^2} + \frac{\left(493039d^2(3bc-2a\right.}{}$$

$$= \frac{493039d^2(3bc-2ad)x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^2} + \frac{493039d^3x^2\,(A}{2}$$

$$= \frac{493039d^2(3bc-2ad)x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^2} + \frac{493039d^3x^2\,(A}{2}$$

$$= \frac{493039d^2(3bc-2ad)x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^2} + \frac{493039d^3x^2\,(A}{2}$$

$$= \frac{493039d^2(3bc-2ad)x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^2} + \frac{493039d^3x^2\,(A}{2}$$

$$= -\frac{493039ABd^2(bc-ad)x}{b^3g^2} - \frac{986078B(bc-ad)^3\left(A+B\log\left(\frac{e(a+b}{c+d}\right.\right.}{b^4g^2(a+bx)}$$

$$= -\frac{493039ABd^2(bc-ad)x}{b^3g^2} - \frac{493039B^2d^2(bc-ad)(a+bx)\log\left(\frac{e(}{}\right.}{b^4g^2}$$

$$= -\frac{493039ABd^2(bc-ad)x}{b^3g^2} - \frac{493039B^2d^2(bc-ad)(a+bx)\log\left(\frac{e(}{}\right.}{b^4g^2}$$

$$= -\frac{493039ABd^2(bc-ad)x}{b^3g^2} - \frac{986078B^2(bc-ad)^3}{b^4g^2(a+bx)} - \frac{986078B^2d(b}{}$$

$$= -\frac{493039ABd^2(bc-ad)x}{b^3g^2} - \frac{986078B^2(bc-ad)^3}{b^4g^2(a+bx)} - \frac{986078B^2d(b}{}$$

$$= -\frac{493039ABd^2(bc-ad)x}{b^3g^2} - \frac{986078B^2(bc-ad)^3}{b^4g^2(a+bx)} - \frac{986078B^2d(b}{}$$

$$= -\frac{493039ABd^2(bc-ad)x}{b^3g^2} - \frac{986078B^2(bc-ad)^3}{b^4g^2(a+bx)} - \frac{986078B^2d(b}{}$$

Mathematica [B] time = 17.47, size = 5108, normalized size = 7.38

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x)^2,x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{A^2d^3i^3x^3 + 3\,A^2cd^2i^3x^2 + 3\,A^2c^2di^3x + A^2c^3i^3 + \left(B^2d^3i^3x^3 + 3\,B^2cd^2i^3x^2 + 3\,B^2c^2di^3x + B^2c^3i^3\right)\log\left(\right.}{b^2g^2x^2 + 2\,abg^2x + a^2g^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, alg
orithm="fricas")
```

```
[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c
^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c
^3*i^3)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i
^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)))/(b^
2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.25, size = 0, normalized size = 0.00

$$\int \frac{\left(dix+ci\right)^{3}\left(B\ln\left(\frac{(bx+a)e}{dx+c}\right)+A\right)^{2}}{\left(bgx+ag\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2,x, alg
orithm="maxima")
```

```
[Out] -3*A^2*(a^2/(b^4*g^2*x + a*b^3*g^2) - x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g
^2))*c*d^2*i^3 + 1/2*(2*a^3/(b^5*g^2*x + a*b^4*g^2) + 6*a^2*log(b*x + a)/(b
^4*g^2) + (b*x^2 - 4*a*x)/(b^3*g^2))*A^2*d^3*i^3 + 3*A^2*c^2*d*i^3*(a/(b^3*
g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2)) - 2*A*B*c^3*i^3*(log(b*e*x/(d*
x + c) + a*e/(d*x + c))/(b^2*g^2*x + a*b*g^2) + 1/(b^2*g^2*x + a*b*g^2) + d
*log(b*x + a)/((b^2*c - a*b*d)*g^2) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2))
```

```
 - A^2*c^3*i^3/(b^2*g^2*x + a*b*g^2) + 1/2*(B^2*b^3*d^3*i^3*x^3 + 3*(2*b^3*
c*d^2*i^3 - a*b^2*d^3*i^3)*B^2*x^2 + 2*(3*a*b^2*c*d^2*i^3 - 2*a^2*b*d^3*i^3
)*B^2*x - 2*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3 - a^3*d^3*
i^3)*B^2 + 6*((b^3*c^2*d*i^3 - 2*a*b^2*c*d^2*i^3 + a^2*b*d^3*i^3)*B^2*x + (
a*b^2*c^2*d*i^3 - 2*a^2*b*c*d^2*i^3 + a^3*d^3*i^3)*B^2)*log(b*x + a))*log(d
*x + c)^2/(b^5*g^2*x + a*b^4*g^2) - integrate(-(B^2*b^4*c^4*i^3*log(e)^2 +
(B^2*b^4*d^4*i^3*log(e)^2 + 2*A*B*b^4*d^4*i^3*log(e))*x^4 + 4*(B^2*b^4*c*d^
3*i^3*log(e)^2 + 2*A*B*b^4*c*d^3*i^3*log(e))*x^3 + 6*(B^2*b^4*c^2*d^2*i^3*l
og(e)^2 + 2*A*B*b^4*c^2*d^2*i^3*log(e))*x^2 + (B^2*b^4*d^4*i^3*x^4 + 4*B^2*
b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2
*b^4*c^4*i^3)*log(b*x + a)^2 + 2*(2*B^2*b^4*c^3*d*i^3*log(e)^2 + 3*A*B*b^4*
c^3*d*i^3*log(e))*x + 2*(B^2*b^4*c^4*i^3*log(e) + (B^2*b^4*d^4*i^3*log(e) +
 A*B*b^4*d^4*i^3)*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e) + A*B*b^4*c*d^3*i^3)*x^
3 + 6*(B^2*b^4*c^2*d^2*i^3*log(e) + A*B*b^4*c^2*d^2*i^3)*x^2 + (4*B^2*b^4*c
^3*d*i^3*log(e) + 3*A*B*b^4*c^3*d*i^3)*x)*log(b*x + a) - ((2*A*B*b^4*d^4*i^
3 + (2*i^3*log(e) + i^3)*B^2*b^4*d^4)*x^4 + 2*(4*A*B*b^4*c*d^3*i^3 - (a*b^3
*d^4*i^3 - (4*i^3*log(e) + 3*i^3)*b^4*c*d^3)*B^2)*x^3 + 2*(b^4*c^4*i^3*log(
e) - a*b^3*c^3*d*i^3 + 3*a^2*b^2*c^2*d^2*i^3 - 3*a^3*b*c*d^3*i^3 + a^4*d^4*
i^3)*B^2 + (12*A*B*b^4*c^2*d^2*i^3 + (12*b^4*c^2*d^2*i^3*log(e) + 12*a*b^3*
c*d^3*i^3 - 7*a^2*b^2*d^4*i^3)*B^2)*x^2 + 2*(3*A*B*b^4*c^3*d*i^3 + (3*a*b^3
*c^2*d^2*i^3 - a^3*b*d^4*i^3 + (4*i^3*log(e) - i^3)*b^4*c^3*d)*B^2)*x + 2*(
B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 3*(3*b^4*c^2*d^2*i^3 - 2*a*
b^3*c*d^3*i^3 + a^2*b^2*d^4*i^3)*B^2*x^2 + 2*(2*b^4*c^3*d*i^3 + 3*a*b^3*c^2
*d^2*i^3 - 6*a^2*b^2*c*d^3*i^3 + 3*a^3*b*d^4*i^3)*B^2*x + (b^4*c^4*i^3 + 3*
a^2*b^2*c^2*d^2*i^3 - 6*a^3*b*c*d^3*i^3 + 3*a^4*d^4*i^3)*B^2)*log(b*x + a))
*log(d*x + c))/(b^6*d*g^2*x^3 + a^2*b^4*c*g^2 + (b^6*c*g^2 + 2*a*b^5*d*g^2)
*x^2 + (2*a*b^5*c*g^2 + a^2*b^4*d*g^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)^2}{\left(a\,g+b\,g\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
2,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**2,x)
```

```
[Out] Timed out
```

3.80 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3}\,dx$

Optimal. Leaf size=604

$$\frac{d^3i^3(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{b^4g^3}+\frac{6Bd^2i^3(bc-ad)\mathrm{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{b^4g^3}+\frac{2Bd^2i^3(bc-ad)\log\left(\frac{bc-}{b(c+}\right.}{b^4}$$

```
[Out] -4*B^2*d*(-a*d+b*c)*i^3*(d*x+c)/b^3/g^3/(b*x+a)-1/4*B^2*(-a*d+b*c)*i^3*(d*x
+c)^2/b^2/g^3/(b*x+a)^2-4*B*d*(-a*d+b*c)*i^3*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x
+c)))/b^3/g^3/(b*x+a)-1/2*B*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x
+c)))/b^2/g^3/(b*x+a)^2+2*B*d^2*(-a*d+b*c)*i^3*ln((-a*d+b*c)/b/(d*x+c))*(A+
B*ln(e*(b*x+a)/(d*x+c)))/b^4/g^3+d^3*i^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c))
)^2/b^4/g^3-2*d*(-a*d+b*c)*i^3*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^3/g^
3/(b*x+a)-1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/b^2/g^
3/(b*x+a)^2-3*d^2*(-a*d+b*c)*i^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^2*ln(1-b*(d*x+
c)/d/(b*x+a))/b^4/g^3+2*B^2*d^2*(-a*d+b*c)*i^3*polylog(2,d*(b*x+a)/b/(d*x+c
))/b^4/g^3+6*B*d^2*(-a*d+b*c)*i^3*(A+B*ln(e*(b*x+a)/(d*x+c)))*polylog(2,b*(
d*x+c)/d/(b*x+a))/b^4/g^3+6*B^2*d^2*(-a*d+b*c)*i^3*polylog(3,b*(d*x+c)/d/(b
*x+a))/b^4/g^3
```

Rubi [B] time = 4.93, antiderivative size = 1412, normalized size of antiderivative = 2.34, number of steps used = 95, number of rules used = 21, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$-\frac{aB^2d^3\log^2(a+bx)i^3}{b^4g^3}+\frac{5B^2d^2(bc-ad)\log^2(a+bx)i^3}{2b^4g^3}-\frac{3ABd^2(bc-ad)\log^2(a+bx)i^3}{b^4g^3}-\frac{3B^2d^2(bc-ad)\log\left(-\frac{bc}{d(a}\right.}{b^4g^3}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^
3,x]
```

```
[Out] -(B^2*(b*c - a*d)^3*i^3)/(4*b^4*g^3*(a + b*x)^2) - (9*B^2*d*(b*c - a*d)^2*i
^3)/(2*b^4*g^3*(a + b*x)) - (9*B^2*d^2*(b*c - a*d)*i^3*Log[a + b*x])/(2*b^4
*g^3) - (a*B^2*d^3*i^3*Log[a + b*x]^2)/(b^4*g^3) - (3*A*B*d^2*(b*c - a*d)*i
^3*Log[a + b*x]^2)/(b^4*g^3) + (5*B^2*d^2*(b*c - a*d)*i^3*Log[a + b*x]^2)/(
2*b^4*g^3) - (3*B^2*d^2*(b*c - a*d)*i^3*Log[-((b*c - a*d)/(d*(a + b*x)))]*L
og[(e*(a + b*x))/(c + d*x)]^2)/(b^4*g^3) - (3*B^2*d^2*(b*c - a*d)*i^3*Log[a
 + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/(b^4*g^3) - (B*(b*c - a*d)^3*i^3*(A
 + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*b^4*g^3*(a + b*x)^2) - (5*B*d*(b*c -
 a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^4*g^3*(a + b*x)) + (2*
a*B*d^3*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(b^4*g^3) -
(5*B*d^2*(b*c - a*d)*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))
/(b^4*g^3) + (d^3*i^3*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^3*g^3) -
 ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*b^4*g^3*(a +
 b*x)^2) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(
b^4*g^3*(a + b*x)) + (3*d^2*(b*c - a*d)*i^3*Log[a + b*x]*(A + B*Log[(e*(a +
 b*x))/(c + d*x)])^2)/(b^4*g^3) + (9*B^2*d^2*(b*c - a*d)*i^3*Log[c + d*x])/
(2*b^4*g^3) + (2*B^2*c*d^2*i^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*
x])/(b^3*g^3) - (5*B^2*d^2*(b*c - a*d)*i^3*Log[-((d*(a + b*x))/(b*c - a*d))
]*Log[c + d*x])/(b^4*g^3) - (2*B*c*d^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*
x)])*Log[c + d*x])/(b^3*g^3) + (5*B*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a +
b*x))/(c + d*x)])*Log[c + d*x])/(b^4*g^3) - (B^2*c*d^2*i^3*Log[c + d*x]^2)/
(b^3*g^3) + (5*B^2*d^2*(b*c - a*d)*i^3*Log[c + d*x]^2)/(2*b^4*g^3) + (2*a*B
^2*d^3*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g^3) + (6*A*B*
```

```
d^2*(b*c - a*d)*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g^3)
- (5*B^2*d^2*(b*c - a*d)*i^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(
b^4*g^3) + (2*a*B^2*d^3*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*
g^3) + (6*A*B*d^2*(b*c - a*d)*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])
/(b^4*g^3) - (5*B^2*d^2*(b*c - a*d)*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a
*d))])/(b^4*g^3) + (2*B^2*c*d^2*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/
(b^3*g^3) - (5*B^2*d^2*(b*c - a*d)*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
])/(b^4*g^3) + (6*B^2*d^2*(b*c - a*d)*i^3*Log[(e*(a + b*x))/(c + d*x)]*Poly
Log[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^3) + (6*B^2*d^2*(b*c - a*d)*i
^3*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
```

```
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(80c+80dx)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3}\,dx = \int \left(\frac{512000d^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^3} + \frac{512000(bc-ad)^3 \left(A+B\log\right.}{b^3g^3(a+bx)^3}\right.$$

$$= \frac{\left(512000d^3\right)\int \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx}{b^3g^3} + \frac{\left(1536000d^2(bc-ad)\right)\int}{b^3g^3}$$

$$= \frac{512000d^3x \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^3} - \frac{256000(bc-ad)^3 \left(A+B\log\left(\right.\right.}{b^4g^3(a+bx)^2}$$

$$= \frac{512000d^3x \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^3} - \frac{256000(bc-ad)^3 \left(A+B\log\left(\right.\right.}{b^4g^3(a+bx)^2}$$

$$= \frac{512000d^3x \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^3} - \frac{256000(bc-ad)^3 \left(A+B\log\left(\right.\right.}{b^4g^3(a+bx)^2}$$

$$= \frac{512000d^3x \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^3} - \frac{256000(bc-ad)^3 \left(A+B\log\left(\right.\right.}{b^4g^3(a+bx)^2}$$

$$= -\frac{256000B(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^3(a+bx)^2} - \frac{2560000Bd(bc-ad)^2}{b^4g^3(a}$$

$$= -\frac{256000B(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{b^4g^3(a+bx)^2} - \frac{2560000Bd(bc-ad)^2}{b^4g^3(a}$$

$$= -\frac{1536000B^2d^2(bc-ad)\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{b^4g^3} - \frac{256000B(bc-}{b}$$

$$= -\frac{128000B^2(bc-ad)^3}{b^4g^3(a+bx)^2} - \frac{2304000B^2d(bc-ad)^2}{b^4g^3(a+bx)} - \frac{2304000B^2d^2(bc}{b^4}$$

$$= -\frac{128000B^2(bc-ad)^3}{b^4g^3(a+bx)^2} - \frac{2304000B^2d(bc-ad)^2}{b^4g^3(a+bx)} - \frac{2304000B^2d^2(bc}{b^4}$$

$$= -\frac{128000B^2(bc-ad)^3}{b^4g^3(a+bx)^2} - \frac{2304000B^2d(bc-ad)^2}{b^4g^3(a+bx)} - \frac{2304000B^2d^2(bc}{b^4}$$

$$= -\frac{128000B^2(bc-ad)^3}{b^4g^3(a+bx)^2} - \frac{2304000B^2d(bc-ad)^2}{b^4g^3(a+bx)} - \frac{2304000B^2d^2(bc}{b^4}$$

Mathematica [B] time = 14.25, size = 6284, normalized size = 10.40

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x)^3,x]
```

[Out] Result too large to show

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2d^3i^3x^3 + 3\,A^2cd^2i^3x^2 + 3\,A^2c^2di^3x + A^2c^3i^3 + \left(B^2d^3i^3x^3 + 3\,B^2cd^2i^3x^2 + 3\,B^2c^2di^3x + B^2c^3i^3\right)\log}{b^3g^3x^3 + 3\,ab^2g^3x^2 + 3\,a^2bg^3x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, alg
orithm="fricas")
```

```
[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c
^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c
^3*i^3)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*i
^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log((b*e*x + a*e)/(d*x + c)))/(b^
3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.29, size = 0, normalized size = 0.00

$$\int \frac{\left(dix+ci\right)^{3} \left(B\ln\left(\frac{(bx+a)e}{dx+c}\right)+A\right)^{2}}{\left(bgx+ag\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3,x, alg
orithm="maxima")
```

```
[Out] -3/2*A*B*c^2*d*i^3*(2*(2*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^4
*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) + (3*a*b*c - a^2*d + 2*(2*b^2*c - a
*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*
b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*
b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c^2 -
2*a*b^3*c*d + a^2*b^2*d^2)*g^3)) - 1/2*A^2*d^3*i^3*((6*a^2*b*x + 5*a^3)/(b^
6*g^3*x^2 + 2*a*b^5*g^3*x + a^2*b^4*g^3) - 2*x/(b^3*g^3) + 6*a*log(b*x + a)
/(b^4*g^3)) + 3/2*A^2*c*d^2*i^3*((4*a*b*x + 3*a^2)/(b^5*g^3*x^2 + 2*a*b^4*g
^3*x + a^2*b^3*g^3) + 2*log(b*x + a)/(b^3*g^3)) + 1/2*A*B*c^3*i^3*((2*b*d*x
 - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x
+ (a^2*b^2*c - a^3*b*d)*g^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^3*
```

```
g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) + 2*d^2*log(b*x + a)/((b^3*c^2 - 2*a*b
^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)/((b^3*c^2 - 2*a*b^2*c*d + a^2
*b*d^2)*g^3)) - 3/2*(2*b*x + a)*A^2*c^2*d*i^3/(b^4*g^3*x^2 + 2*a*b^3*g^3*x
+ a^2*b^2*g^3) - 1/2*A^2*c^3*i^3/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3)
+ 1/2*(2*B^2*b^3*d^3*i^3*x^3 + 4*B^2*a*b^2*d^3*i^3*x^2 - 2*(3*b^3*c^2*d*i^3
 - 6*a*b^2*c*d^2*i^3 + 2*a^2*b*d^3*i^3)*B^2*x - (b^3*c^3*i^3 + 3*a*b^2*c^2*
d*i^3 - 9*a^2*b*c*d^2*i^3 + 5*a^3*d^3*i^3)*B^2 + 6*((b^3*c*d^2*i^3 - a*b^2*
d^3*i^3)*B^2*x^2 + 2*(a*b^2*c*d^2*i^3 - a^2*b*d^3*i^3)*B^2*x + (a^2*b*c*d^2
*i^3 - a^3*d^3*i^3)*B^2)*log(b*x + a))*log(d*x + c)^2/(b^6*g^3*x^2 + 2*a*b^
5*g^3*x + a^2*b^4*g^3) - integrate(-(4*B^2*b^4*c^3*d*i^3*x*log(e)^2 + B^2*b
^4*c^4*i^3*log(e)^2 + (B^2*b^4*d^4*i^3*log(e)^2 + 2*A*B*b^4*d^4*i^3*log(e))
*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e)^2 + 2*A*B*b^4*c*d^3*i^3*log(e))*x^3 + 6*
(B^2*b^4*c^2*d^2*i^3*log(e)^2 + A*B*b^4*c^2*d^2*i^3*log(e))*x^2 + (B^2*b^4*
d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b
^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*log(b*x + a)^2 + 2*(4*B^2*b^4*c^3*d*i^3*x
*log(e) + B^2*b^4*c^4*i^3*log(e) + (B^2*b^4*d^4*i^3*log(e) + A*B*b^4*d^4*i^
3)*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e) + A*B*b^4*c*d^3*i^3)*x^3 + 3*(2*B^2*b^
4*c^2*d^2*i^3*log(e) + A*B*b^4*c^2*d^2*i^3)*x^2)*log(b*x + a) - (2*(A*B*b^4
*d^4*i^3 + (i^3*log(e) + i^3)*B^2*b^4*d^4)*x^4 - (9*a*b^3*c^2*d^2*i^3 - 21*
a^2*b^2*c*d^3*i^3 + 9*a^3*b*d^4*i^3 - (8*i^3*log(e) - i^3)*b^4*c^3*d)*B^2*x
 + 2*(4*A*B*b^4*c*d^3*i^3 + (4*b^4*c*d^3*i^3*log(e) + 3*a*b^3*d^4*i^3)*B^2)
*x^3 + (2*b^4*c^4*i^3*log(e) - a*b^3*c^3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 9*
a^3*b*c*d^3*i^3 - 5*a^4*d^4*i^3)*B^2 + 6*(A*B*b^4*c^2*d^2*i^3 + (2*a*b^3*c*
d^3*i^3 + (2*i^3*log(e) - i^3)*b^4*c^2*d^2)*B^2)*x^2 + 2*(B^2*b^4*d^4*i^3*x
^4 + (7*b^4*c*d^3*i^3 - 3*a*b^3*d^4*i^3)*B^2*x^3 + 3*(2*b^4*c^2*d^2*i^3 + 3
*a*b^3*c*d^3*i^3 - 3*a^2*b^2*d^4*i^3)*B^2*x^2 + (4*b^4*c^3*d*i^3 + 9*a^2*b^
2*c*d^3*i^3 - 9*a^3*b*d^4*i^3)*B^2*x + (b^4*c^4*i^3 + 3*a^3*b*c*d^3*i^3 - 3
*a^4*d^4*i^3)*B^2)*log(b*x + a))*log(d*x + c))/(b^7*d*g^3*x^4 + a^3*b^4*c*g
^3 + (b^7*c*g^3 + 3*a*b^6*d*g^3)*x^3 + 3*(a*b^6*c*g^3 + a^2*b^5*d*g^3)*x^2
+ (3*a^2*b^5*c*g^3 + a^3*b^4*d*g^3)*x), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)^2}{\left(a\,g+b\,g\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
3,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
3, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**3,x)
```

```
[Out] Timed out
```

3.81 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^5}\,dx$

Optimal. Leaf size=147

$$-\frac{i^3(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{4g^5(a+bx)^4(bc-ad)}-\frac{Bi^3(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{8g^5(a+bx)^4(bc-ad)}-\frac{B^2i^3(c+dx)^4}{32g^5(a+bx)^4(bc-ad)}$$

```
[Out] -1/32*B^2*i^3*(d*x+c)^4/(-a*d+b*c)/g^5/(b*x+a)^4-1/8*B*i^3*(d*x+c)^4*(A+B*l
n(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)/g^5/(b*x+a)^4-1/4*i^3*(d*x+c)^4*(A+B*ln(e*
(b*x+a)/(d*x+c)))^2/(-a*d+b*c)/g^5/(b*x+a)^4
```

Rubi [C] time = 4.54, antiderivative size = 970, normalized size of antiderivative = 6.60, number of steps used = 130, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.262, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i^3\log^2(a+bx)d^4}{4b^4(bc-ad)g^5}+\frac{B^2i^3\log^2(c+dx)d^4}{4b^4(bc-ad)g^5}-\frac{B^2i^3\log(a+bx)d^4}{8b^4(bc-ad)g^5}-\frac{Bi^3\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)d^4}{2b^4(bc-ad)g^5}+\frac{B^2i^3}{8b^4}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^
5,x]
```

```
[Out] -(B^2*(b*c - a*d)^3*i^3)/(32*b^4*g^5*(a + b*x)^4) - (B^2*d*(b*c - a*d)^2*i^
3)/(8*b^4*g^5*(a + b*x)^3) - (3*B^2*d^2*(b*c - a*d)*i^3)/(16*b^4*g^5*(a + b
*x)^2) - (B^2*d^3*i^3)/(8*b^4*g^5*(a + b*x)) - (B^2*d^4*i^3*Log[a + b*x])/(
8*b^4*(b*c - a*d)*g^5) + (B^2*d^4*i^3*Log[a + b*x]^2)/(4*b^4*(b*c - a*d)*g^
5) - (B*(b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(8*b^4*g^5*
(a + b*x)^4) - (B*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))
/(2*b^4*g^5*(a + b*x)^3) - (3*B*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x)
)/(c + d*x)]))/(4*b^4*g^5*(a + b*x)^2) - (B*d^3*i^3*(A + B*Log[(e*(a + b*x)
)/(c + d*x)]))/(2*b^4*g^5*(a + b*x)) - (B*d^4*i^3*Log[a + b*x]*(A + B*Log[(
e*(a + b*x))/(c + d*x)]))/(2*b^4*(b*c - a*d)*g^5) - ((b*c - a*d)^3*i^3*(A +
 B*Log[(e*(a + b*x))/(c + d*x)])^2)/(4*b^4*g^5*(a + b*x)^4) - (d*(b*c - a*d
)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^4*g^5*(a + b*x)^3) - (3*
d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*b^4*g^5*(a +
 b*x)^2) - (d^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(b^4*g^5*(a + b
*x)) + (B^2*d^4*i^3*Log[c + d*x])/(8*b^4*(b*c - a*d)*g^5) - (B^2*d^4*i^3*Lo
g[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(2*b^4*(b*c - a*d)*g^5) + (B*
d^4*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(2*b^4*(b*c - a*
d)*g^5) + (B^2*d^4*i^3*Log[c + d*x]^2)/(4*b^4*(b*c - a*d)*g^5) - (B^2*d^4*i
^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(2*b^4*(b*c - a*d)*g^5) - (
B^2*d^4*i^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(2*b^4*(b*c - a*d)*g^
5) - (B^2*d^4*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(2*b^4*(b*c - a*d)
*g^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
```

```
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(81c+81dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^5}\,dx = \int\left(\frac{531441(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^5(a+bx)^5} + \frac{1594323d(bc-ad)^2}{b^3g^5(a}\right.$$

$$= \frac{(531441d^3)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^2}dx}{b^3g^5} + \frac{(1594323d^2(bc-ad))\int \frac{\left(A+B\log\right.}{(a}}{b^3g^5}$$

$$= -\frac{531441(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^4g^5(a+bx)^4} - \frac{531441d(bc-ad)^2\left(A\right.}{b^4g^5(a+}$$

$$= -\frac{531441(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^4g^5(a+bx)^4} - \frac{531441d(bc-ad)^2\left(A\right.}{b^4g^5(a+}$$

$$= -\frac{531441(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^4g^5(a+bx)^4} - \frac{531441d(bc-ad)^2\left(A\right.}{b^4g^5(a+}$$

$$= -\frac{531441(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4b^4g^5(a+bx)^4} - \frac{531441d(bc-ad)^2\left(A\right.}{b^4g^5(a+}$$

$$= -\frac{531441B(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{8b^4g^5(a+bx)^4} - \frac{531441Bd(bc-ad)^2\left(A\right.}{2b^4g^5(a+}$$

$$= -\frac{531441B(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{8b^4g^5(a+bx)^4} - \frac{531441Bd(bc-ad)^2\left(A\right.}{2b^4g^5(a+}$$

$$= -\frac{531441B(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{8b^4g^5(a+bx)^4} - \frac{531441Bd(bc-ad)^2\left(A\right.}{2b^4g^5(a+}$$

$$= -\frac{531441B^2(bc-ad)^3}{32b^4g^5(a+bx)^4} - \frac{531441B^2d(bc-ad)^2}{8b^4g^5(a+bx)^3} - \frac{1594323B^2d^2(bc-}{16b^4g^5(a+bx)^2}$$

$$= -\frac{531441B^2(bc-ad)^3}{32b^4g^5(a+bx)^4} - \frac{531441B^2d(bc-ad)^2}{8b^4g^5(a+bx)^3} - \frac{1594323B^2d^2(bc-}{16b^4g^5(a+bx)^2}$$

$$= -\frac{531441B^2(bc-ad)^3}{32b^4g^5(a+bx)^4} - \frac{531441B^2d(bc-ad)^2}{8b^4g^5(a+bx)^3} - \frac{1594323B^2d^2(bc-}{16b^4g^5(a+bx)^2}$$

$$= -\frac{531441B^2(bc-ad)^3}{32b^4g^5(a+bx)^4} - \frac{531441B^2d(bc-ad)^2}{8b^4g^5(a+bx)^3} - \frac{1594323B^2d^2(bc-}{16b^4g^5(a+bx)^2}$$

Mathematica [C] time = 1.44, size = 2470, normalized size = 16.80

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x)^5,x]
```

```
[Out] -1/32*(i^3*(8*A^2*b^4*c^4 + 4*A*b^4*B*c^4 + b^4*B^2*c^4 - 8*a^4*A^2*d^4 - 4
*a^4*A*B*d^4 - a^4*B^2*d^4 + 32*A^2*b^4*c^3*d*x + 16*A*b^4*B*c^3*d*x + 4*b^
4*B^2*c^3*d*x - 32*a^3*A^2*b*d^4*x - 16*a^3*A*b*B*d^4*x - 4*a^3*b*B^2*d^4*x
 + 48*A^2*b^4*c^2*d^2*x^2 + 24*A*b^4*B*c^2*d^2*x^2 + 6*b^4*B^2*c^2*d^2*x^2
- 48*a^2*A^2*b^2*d^4*x^2 - 24*a^2*A*b^2*B*d^4*x^2 - 6*a^2*b^2*B^2*d^4*x^2 +
 32*A^2*b^4*c*d^3*x^3 + 16*A*b^4*B*c*d^3*x^3 + 4*b^4*B^2*c*d^3*x^3 - 32*a*A
^2*b^3*d^4*x^3 - 16*a*A*b^3*B*d^4*x^3 - 4*a*b^3*B^2*d^4*x^3 + 16*a^4*A*B*d^
4*Log[a + b*x] + 4*a^4*B^2*d^4*Log[a + b*x] + 64*a^3*A*b*B*d^4*x*Log[a + b*
x] + 16*a^3*b*B^2*d^4*x*Log[a + b*x] + 96*a^2*A*b^2*B*d^4*x^2*Log[a + b*x]
+ 24*a^2*b^2*B^2*d^4*x^2*Log[a + b*x] + 64*a*A*b^3*B*d^4*x^3*Log[a + b*x] +
 16*a*b^3*B^2*d^4*x^3*Log[a + b*x] + 16*A*b^4*B*d^4*x^4*Log[a + b*x] + 4*b^
4*B^2*d^4*x^4*Log[a + b*x] - 8*a^4*B^2*d^4*Log[a + b*x]^2 - 32*a^3*b*B^2*d^
4*x*Log[a + b*x]^2 - 48*a^2*b^2*B^2*d^4*x^2*Log[a + b*x]^2 - 32*a*b^3*B^2*d
^4*x^3*Log[a + b*x]^2 - 8*b^4*B^2*d^4*x^4*Log[a + b*x]^2 + 16*A*b^4*B*c^4*L
og[(e*(a + b*x))/(c + d*x)] + 4*b^4*B^2*c^4*Log[(e*(a + b*x))/(c + d*x)] -
16*a^4*A*B*d^4*Log[(e*(a + b*x))/(c + d*x)] - 4*a^4*B^2*d^4*Log[(e*(a + b*x
))/(c + d*x)] + 64*A*b^4*B*c^3*d*x*Log[(e*(a + b*x))/(c + d*x)] + 16*b^4*B^
2*c^3*d*x*Log[(e*(a + b*x))/(c + d*x)] - 64*a^3*A*b*B*d^4*x*Log[(e*(a + b*x
))/(c + d*x)] - 16*a^3*b*B^2*d^4*x*Log[(e*(a + b*x))/(c + d*x)] + 96*A*b^4*
B*c^2*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)] + 24*b^4*B^2*c^2*d^2*x^2*Log[(e*
(a + b*x))/(c + d*x)] - 96*a^2*A*b^2*B*d^4*x^2*Log[(e*(a + b*x))/(c + d*x)]
 - 24*a^2*b^2*B^2*d^4*x^2*Log[(e*(a + b*x))/(c + d*x)] + 64*A*b^4*B*c*d^3*x
^3*Log[(e*(a + b*x))/(c + d*x)] + 16*b^4*B^2*c*d^3*x^3*Log[(e*(a + b*x))/(c
 + d*x)] - 64*a*A*b^3*B*d^4*x^3*Log[(e*(a + b*x))/(c + d*x)] - 16*a*b^3*B^2
*d^4*x^3*Log[(e*(a + b*x))/(c + d*x)] + 16*a^4*B^2*d^4*Log[a + b*x]*Log[(e*
(a + b*x))/(c + d*x)] + 64*a^3*b*B^2*d^4*x*Log[a + b*x]*Log[(e*(a + b*x))/(
c + d*x)] + 96*a^2*b^2*B^2*d^4*x^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)
] + 64*a*b^3*B^2*d^4*x^3*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 16*b^4
*B^2*d^4*x^4*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 8*b^4*B^2*c^4*Log[
(e*(a + b*x))/(c + d*x)]^2 - 8*a^4*B^2*d^4*Log[(e*(a + b*x))/(c + d*x)]^2 +
 32*b^4*B^2*c^3*d*x*Log[(e*(a + b*x))/(c + d*x)]^2 - 32*a^3*b*B^2*d^4*x*Log
[(e*(a + b*x))/(c + d*x)]^2 + 48*b^4*B^2*c^2*d^2*x^2*Log[(e*(a + b*x))/(c +
 d*x)]^2 - 48*a^2*b^2*B^2*d^4*x^2*Log[(e*(a + b*x))/(c + d*x)]^2 + 32*b^4*B
^2*c*d^3*x^3*Log[(e*(a + b*x))/(c + d*x)]^2 - 32*a*b^3*B^2*d^4*x^3*Log[(e*(
a + b*x))/(c + d*x)]^2 - 16*a^4*A*B*d^4*Log[c + d*x] - 4*a^4*B^2*d^4*Log[c
+ d*x] - 64*a^3*A*b*B*d^4*x*Log[c + d*x] - 16*a^3*b*B^2*d^4*x*Log[c + d*x]
- 96*a^2*A*b^2*B*d^4*x^2*Log[c + d*x] - 24*a^2*b^2*B^2*d^4*x^2*Log[c + d*x]
 - 64*a*A*b^3*B*d^4*x^3*Log[c + d*x] - 16*a*b^3*B^2*d^4*x^3*Log[c + d*x] -
16*A*b^4*B*d^4*x^4*Log[c + d*x] - 4*b^4*B^2*d^4*x^4*Log[c + d*x] + 16*a^4*B
^2*d^4*Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c + d*x] + 64*a^3*b*B^2*d^4*x*
Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c + d*x] + 96*a^2*b^2*B^2*d^4*x^2*Log
[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c + d*x] + 64*a*b^3*B^2*d^4*x^3*Log[(d*(
a + b*x))/(-(b*c) + a*d)]*Log[c + d*x] + 16*b^4*B^2*d^4*x^4*Log[(d*(a + b*x
))/(-(b*c) + a*d)]*Log[c + d*x] - 16*a^4*B^2*d^4*Log[(e*(a + b*x))/(c + d*x
)]*Log[c + d*x] - 64*a^3*b*B^2*d^4*x*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d
*x] - 96*a^2*b^2*B^2*d^4*x^2*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 64
*a*b^3*B^2*d^4*x^3*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 16*b^4*B^2*d
^4*x^4*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 8*a^4*B^2*d^4*Log[c + d*
x]^2 - 32*a^3*b*B^2*d^4*x*Log[c + d*x]^2 - 48*a^2*b^2*B^2*d^4*x^2*Log[c + d
*x]^2 - 32*a*b^3*B^2*d^4*x^3*Log[c + d*x]^2 - 8*b^4*B^2*d^4*x^4*Log[c + d*x
]^2 + 16*a^4*B^2*d^4*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] + 64*a^3*b
*B^2*d^4*x*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] + 96*a^2*b^2*B^2*d^4
*x^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] + 64*a*b^3*B^2*d^4*x^3*Log
[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] + 16*b^4*B^2*d^4*x^4*Log[a + b*x]*
Log[(b*(c + d*x))/(b*c - a*d)] + 16*B^2*d^4*(a + b*x)^4*PolyLog[2, (d*(a +
```

```
b*x))/(-(b*c) + a*d)] + 16*B^2*d^4*(a + b*x)^4*PolyLog[2, (b*(c + d*x))/(b*
c - a*d)]))/(b^4*(b*c - a*d)*g^5*(a + b*x)^4)
```

fricas [B] time = 0.89, size = 559, normalized size = 3.80

$$-\frac{4\left(\left(\left(8\,A^2+4\,AB+B^2\right)b^4cd^3-\left(8\,A^2+4\,AB+B^2\right)ab^3d^4\right)i^3x^3+6\left(\left(8\,A^2+4\,AB+B^2\right)b^4c^2d^2-\left(8\,A^2+4\,AB+\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, alg
orithm="fricas")
```

```
[Out] -1/32*(4*((8*A^2 + 4*A*B + B^2)*b^4*c*d^3 - (8*A^2 + 4*A*B + B^2)*a*b^3*d^4
)*i^3*x^3 + 6*((8*A^2 + 4*A*B + B^2)*b^4*c^2*d^2 - (8*A^2 + 4*A*B + B^2)*a^
2*b^2*d^4)*i^3*x^2 + 4*((8*A^2 + 4*A*B + B^2)*b^4*c^3*d - (8*A^2 + 4*A*B +
B^2)*a^3*b*d^4)*i^3*x + ((8*A^2 + 4*A*B + B^2)*b^4*c^4 - (8*A^2 + 4*A*B + B
^2)*a^4*d^4)*i^3 + 8*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2
*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*log((b*e*x
+ a*e)/(d*x + c))^2 + 4*((4*A*B + B^2)*b^4*d^4*i^3*x^4 + 4*(4*A*B + B^2)*b^
4*c*d^3*i^3*x^3 + 6*(4*A*B + B^2)*b^4*c^2*d^2*i^3*x^2 + 4*(4*A*B + B^2)*b^4
*c^3*d*i^3*x + (4*A*B + B^2)*b^4*c^4*i^3)*log((b*e*x + a*e)/(d*x + c)))/((b
^9*c - a*b^8*d)*g^5*x^4 + 4*(a*b^8*c - a^2*b^7*d)*g^5*x^3 + 6*(a^2*b^7*c -
a^3*b^6*d)*g^5*x^2 + 4*(a^3*b^6*c - a^4*b^5*d)*g^5*x + (a^4*b^5*c - a^5*b^4
*d)*g^5)
```

giac [A] time = 3.22, size = 185, normalized size = 1.26

$$\frac{\left(8\,B^2ie^5\log\left(\frac{bxe+ae}{dx+c}\right)^2+16\,ABie^5\log\left(\frac{bxe+ae}{dx+c}\right)+4\,B^2ie^5\log\left(\frac{bxe+ae}{dx+c}\right)+8\,A^2ie^5+4\,ABie^5+B^2ie^5\right)(dx+c)^4\left(\frac{}{(bce-ad}\right.}{32\,(bxe+ae)^4g^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, alg
orithm="giac")
```

```
[Out] 1/32*(8*B^2*i*e^5*log((b*x*e + a*e)/(d*x + c))^2 + 16*A*B*i*e^5*log((b*x*e
+ a*e)/(d*x + c)) + 4*B^2*i*e^5*log((b*x*e + a*e)/(d*x + c)) + 8*A^2*i*e^5
+ 4*A*B*i*e^5 + B^2*i*e^5)*(d*x + c)^4*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) -
 a*d/((b*c*e - a*d*e)*(b*c - a*d)))/((b*x*e + a*e)^4*g^5)
```

maple [B] time = 0.05, size = 890, normalized size = 6.05

$$\frac{B^2ad\,e^4i^3\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{4\,(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^4g^5}-\frac{B^2bc\,e^4i^3\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{4\,(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^4g^5}+\frac{ABad\,e^4i^3\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)}{2\,(ad-bc)^2\left(\frac{ae}{dx+c}-\frac{bce}{(dx+c)d}+\frac{be}{d}\right)^4g^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^5,x)
```

```
[Out] 1/4*d*e^4*i^3/(a*d-b*c)^2/g^5*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4
*a-1/4*e^4*i^3/(a*d-b*c)^2/g^5*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
4*b*c+1/2*d*e^4*i^3/(a*d-b*c)^2/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*e^4*i^3/(a*d-b*c)^2/g^5*A*B/(1
/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c
+1/8*d*e^4*i^3/(a*d-b*c)^2/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
4*a-1/8*e^4*i^3/(a*d-b*c)^2/g^5*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
```

```
^4*b*c+1/4*d*e^4*i^3/(a*d-b*c)^2/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b
/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/4*e^4*i^3/(a*d-b*c)^2/g^5*B^2
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^
2*b*c+1/8*d*e^4*i^3/(a*d-b*c)^2/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/8*e^4*i^3/(a*d-b*c)^2/g^5*B^2/(1
/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c
+1/32*d*e^4*i^3/(a*d-b*c)^2/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^4*a-1/32*e^4*i^3/(a*d-b*c)^2/g^5*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)^4*b*c
```

maxima [B] time = 11.34, size = 11688, normalized size = 79.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^5,x, alg
orithm="maxima")
```

```
[Out] -1/4*(4*b*x + a)*B^2*c^2*d*i^3*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^6*
g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g
^5) - 1/4*(6*b^2*x^2 + 4*a*b*x + a^2)*B^2*c*d^2*i^3*log(b*e*x/(d*x + c) + a
*e/(d*x + c))^2/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*
b^4*g^5*x + a^4*b^3*g^5) - 1/4*(4*b^3*x^3 + 6*a*b^2*x^2 + 4*a^2*b*x + a^3)*
B^2*d^3*i^3*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^8*g^5*x^4 + 4*a*b^7*g
^5*x^3 + 6*a^2*b^6*g^5*x^2 + 4*a^3*b^5*g^5*x + a^4*b^4*g^5) + 1/288*(12*((1
2*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 -
6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d
^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 +
 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 +
6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 +
 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x +
(a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*g^5) + 12*d^4
*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d
^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^
2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5))*log(b*e*x/(d*x + c) + a*
e/(d*x + c)) - (9*b^4*c^4 - 64*a*b^3*c^3*d + 216*a^2*b^2*c^2*d^2 - 576*a^3*
b*c*d^3 + 415*a^4*d^4 - 300*(b^4*c*d^3 - a*b^3*d^4)*x^3 + 6*(13*b^4*c^2*d^2
 - 176*a*b^3*c*d^3 + 163*a^2*b^2*d^4)*x^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x
^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a)^2 + 72*(b^4*
d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*lo
g(d*x + c)^2 - 4*(7*b^4*c^3*d - 60*a*b^3*c^2*d^2 + 324*a^2*b^2*c*d^3 - 271*
a^3*b*d^4)*x - 300*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a
^3*b*d^4*x + a^4*d^4)*log(b*x + a) + 12*(25*b^4*d^4*x^4 + 100*a*b^3*d^4*x^3
 + 150*a^2*b^2*d^4*x^2 + 100*a^3*b*d^4*x + 25*a^4*d^4 - 12*(b^4*d^4*x^4 + 4
*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a))
*log(d*x + c))/(a^4*b^5*c^4*g^5 - 4*a^5*b^4*c^3*d*g^5 + 6*a^6*b^3*c^2*d^2*g
^5 - 4*a^7*b^2*c*d^3*g^5 + a^8*b*d^4*g^5 + (b^9*c^4*g^5 - 4*a*b^8*c^3*d*g^5
 + 6*a^2*b^7*c^2*d^2*g^5 - 4*a^3*b^6*c*d^3*g^5 + a^4*b^5*d^4*g^5)*x^4 + 4*(
a*b^8*c^4*g^5 - 4*a^2*b^7*c^3*d*g^5 + 6*a^3*b^6*c^2*d^2*g^5 - 4*a^4*b^5*c*d
^3*g^5 + a^5*b^4*d^4*g^5)*x^3 + 6*(a^2*b^7*c^4*g^5 - 4*a^3*b^6*c^3*d*g^5 +
6*a^4*b^5*c^2*d^2*g^5 - 4*a^5*b^4*c*d^3*g^5 + a^6*b^3*d^4*g^5)*x^2 + 4*(a^3
*b^6*c^4*g^5 - 4*a^4*b^5*c^3*d*g^5 + 6*a^5*b^4*c^2*d^2*g^5 - 4*a^6*b^3*c*d^
3*g^5 + a^7*b^2*d^4*g^5)*x))*B^2*c^3*i^3 - 1/288*(12*((7*a*b^3*c^3 - 33*a^2
*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3
 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21
*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*
d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d
 + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*
d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2
*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d
```

```
+ 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)
/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*
d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d +
 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5))*log(b*e*x/(d*x +
c) + a*e/(d*x + c)) + (37*a*b^4*c^4 - 304*a^2*b^3*c^3*d + 1512*a^3*b^2*c^2*
d^2 - 1360*a^4*b*c*d^3 + 115*a^5*d^4 + 12*(88*b^5*c^2*d^2 - 101*a*b^4*c*d^3
 + 13*a^2*b^3*d^4)*x^3 - 6*(40*b^5*c^3*d - 609*a*b^4*c^2*d^2 + 648*a^2*b^3*
c*d^3 - 79*a^3*b^2*d^4)*x^2 - 72*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 -
a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 -
 a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*log(b*x + a)^2 - 72*
(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3
 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*
c*d^3 - a^4*b*d^4)*x)*log(d*x + c)^2 + 4*(16*b^5*c^4 - 163*a*b^4*c^3*d + 10
68*a^2*b^3*c^2*d^2 - 1036*a^3*b^2*c*d^3 + 115*a^4*b*d^4)*x + 12*(88*a^4*b*c
*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4)*x^4 + 4*(88*a*b^4*c*d^3 -
 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a^3*b^2*d^4)*x^2 + 4*(88*a^
3*b^2*c*d^3 - 13*a^4*b*d^4)*x)*log(b*x + a) - 12*(88*a^4*b*c*d^3 - 13*a^5*d
^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4)*x^4 + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4
)*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a^3*b^2*d^4)*x^2 + 4*(88*a^3*b^2*c*d^3 - 1
3*a^4*b*d^4)*x - 12*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^
4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)
*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*log(b*x + a))*log(d*x + c))/(a^4*
b^6*c^4*g^5 - 4*a^5*b^5*c^3*d*g^5 + 6*a^6*b^4*c^2*d^2*g^5 - 4*a^7*b^3*c*d^3
*g^5 + a^8*b^2*d^4*g^5 + (b^10*c^4*g^5 - 4*a*b^9*c^3*d*g^5 + 6*a^2*b^8*c^2*
d^2*g^5 - 4*a^3*b^7*c*d^3*g^5 + a^4*b^6*d^4*g^5)*x^4 + 4*(a*b^9*c^4*g^5 - 4
*a^2*b^8*c^3*d*g^5 + 6*a^3*b^7*c^2*d^2*g^5 - 4*a^4*b^6*c*d^3*g^5 + a^5*b^5*
d^4*g^5)*x^3 + 6*(a^2*b^8*c^4*g^5 - 4*a^3*b^7*c^3*d*g^5 + 6*a^4*b^6*c^2*d^2
*g^5 - 4*a^5*b^5*c*d^3*g^5 + a^6*b^4*d^4*g^5)*x^2 + 4*(a^3*b^7*c^4*g^5 - 4*
a^4*b^6*c^3*d*g^5 + 6*a^5*b^5*c^2*d^2*g^5 - 4*a^6*b^4*c*d^3*g^5 + a^7*b^3*d
^4*g^5)*x))*B^2*c^2*d*i^3 - 1/288*(12*((13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d +
 33*a^4*b*c*d^2 - 7*a^5*d^3 - 12*(6*b^5*c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3
)*x^3 + 6*(6*b^5*c^3 - 46*a*b^4*c^2*d + 29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3)*x
^2 + 4*(10*a*b^4*c^3 - 63*a^2*b^3*c^2*d + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x
)/((b^10*c^3 - 3*a*b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(
a*b^9*c^3 - 3*a^2*b^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a
^2*b^8*c^3 - 3*a^3*b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(
a^3*b^7*c^3 - 3*a^4*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4
*b^6*c^3 - 3*a^5*b^5*c^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^
2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d +
 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^
2 - 4*a*b*c*d^3 + a^2*d^4)*log(d*x + c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b
^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5))*log(b*e*x/(d*x + c) + a*e
/(d*x + c)) + (115*a^2*b^4*c^4 - 1360*a^3*b^3*c^3*d + 1512*a^4*b^2*c^2*d^2
- 304*a^5*b*c*d^3 + 37*a^6*d^4 - 12*(108*b^6*c^3*d - 148*a*b^5*c^2*d^2 + 47
*a^2*b^4*c*d^3 - 7*a^3*b^3*d^4)*x^3 + 6*(36*b^6*c^4 - 712*a*b^5*c^3*d + 903
*a^2*b^4*c^2*d^2 - 264*a^3*b^3*c*d^3 + 37*a^4*b^2*d^4)*x^2 + 72*(6*a^4*b^2*
c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^
4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6
*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^
2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*x)*log(b*x + a)^2 + 72*(6*a^4*b^2*c^2*d^2
- 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x
^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4
*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^
4*b^2*c*d^3 + a^5*b*d^4)*x)*log(d*x + c)^2 + 4*(76*a*b^5*c^4 - 1057*a^2*b^4
*c^3*d + 1248*a^3*b^3*c^2*d^2 - 304*a^4*b^2*c*d^3 + 37*a^5*b*d^4)*x - 12*(1
08*a^4*b^2*c^2*d^2 - 40*a^5*b*c*d^3 + 7*a^6*d^4 + (108*b^6*c^2*d^2 - 40*a*b
^5*c*d^3 + 7*a^2*b^4*d^4)*x^4 + 4*(108*a*b^5*c^2*d^2 - 40*a^2*b^4*c*d^3 + 7
*a^3*b^3*d^4)*x^3 + 6*(108*a^2*b^4*c^2*d^2 - 40*a^3*b^3*c*d^3 + 7*a^4*b^2*d
^4)*x^2 + 4*(108*a^3*b^3*c^2*d^2 - 40*a^4*b^2*c*d^3 + 7*a^5*b*d^4)*x)*log(b
```

```
*x + a) + 12*(108*a^4*b^2*c^2*d^2 - 40*a^5*b*c*d^3 + 7*a^6*d^4 + (108*b^6*c
^2*d^2 - 40*a*b^5*c*d^3 + 7*a^2*b^4*d^4)*x^4 + 4*(108*a*b^5*c^2*d^2 - 40*a^
2*b^4*c*d^3 + 7*a^3*b^3*d^4)*x^3 + 6*(108*a^2*b^4*c^2*d^2 - 40*a^3*b^3*c*d^
3 + 7*a^4*b^2*d^4)*x^2 + 4*(108*a^3*b^3*c^2*d^2 - 40*a^4*b^2*c*d^3 + 7*a^5*
b*d^4)*x - 12*(6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2
 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3
+ a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*
x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*x)*log(b*x + a))*
log(d*x + c))/(a^4*b^7*c^4*g^5 - 4*a^5*b^6*c^3*d*g^5 + 6*a^6*b^5*c^2*d^2*g^
5 - 4*a^7*b^4*c*d^3*g^5 + a^8*b^3*d^4*g^5 + (b^11*c^4*g^5 - 4*a*b^10*c^3*d*
g^5 + 6*a^2*b^9*c^2*d^2*g^5 - 4*a^3*b^8*c*d^3*g^5 + a^4*b^7*d^4*g^5)*x^4 +
4*(a*b^10*c^4*g^5 - 4*a^2*b^9*c^3*d*g^5 + 6*a^3*b^8*c^2*d^2*g^5 - 4*a^4*b^7
*c*d^3*g^5 + a^5*b^6*d^4*g^5)*x^3 + 6*(a^2*b^9*c^4*g^5 - 4*a^3*b^8*c^3*d*g^
5 + 6*a^4*b^7*c^2*d^2*g^5 - 4*a^5*b^6*c*d^3*g^5 + a^6*b^5*d^4*g^5)*x^2 + 4*
(a^3*b^8*c^4*g^5 - 4*a^4*b^7*c^3*d*g^5 + 6*a^5*b^6*c^2*d^2*g^5 - 4*a^6*b^5*
c*d^3*g^5 + a^7*b^4*d^4*g^5)*x))*B^2*c*d^2*i^3 - 1/288*(12*((25*a^3*b^3*c^3
 - 23*a^4*b^2*c^2*d + 13*a^5*b*c*d^2 - 3*a^6*d^3 + 12*(4*b^6*c^3 - 6*a*b^5*
c^2*d + 4*a^2*b^4*c*d^2 - a^3*b^3*d^3)*x^3 + 6*(18*a*b^5*c^3 - 22*a^2*b^4*c
^2*d + 13*a^3*b^3*c*d^2 - 3*a^4*b^2*d^3)*x^2 + 4*(22*a^2*b^4*c^3 - 23*a^3*b
^3*c^2*d + 13*a^4*b^2*c*d^2 - 3*a^5*b*d^3)*x)/((b^11*c^3 - 3*a*b^10*c^2*d +
 3*a^2*b^9*c*d^2 - a^3*b^8*d^3)*g^5*x^4 + 4*(a*b^10*c^3 - 3*a^2*b^9*c^2*d +
 3*a^3*b^8*c*d^2 - a^4*b^7*d^3)*g^5*x^3 + 6*(a^2*b^9*c^3 - 3*a^3*b^8*c^2*d
+ 3*a^4*b^7*c*d^2 - a^5*b^6*d^3)*g^5*x^2 + 4*(a^3*b^8*c^3 - 3*a^4*b^7*c^2*d
 + 3*a^5*b^6*c*d^2 - a^6*b^5*d^3)*g^5*x + (a^4*b^7*c^3 - 3*a^5*b^6*c^2*d +
3*a^6*b^5*c*d^2 - a^7*b^4*d^3)*g^5) + 12*(4*b^3*c^3*d - 6*a*b^2*c^2*d^2 + 4
*a^2*b*c*d^3 - a^3*d^4)*log(b*x + a)/((b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*
c^2*d^2 - 4*a^3*b^5*c*d^3 + a^4*b^4*d^4)*g^5) - 12*(4*b^3*c^3*d - 6*a*b^2*c
^2*d^2 + 4*a^2*b*c*d^3 - a^3*d^4)*log(d*x + c)/((b^8*c^4 - 4*a*b^7*c^3*d +
6*a^2*b^6*c^2*d^2 - 4*a^3*b^5*c*d^3 + a^4*b^4*d^4)*g^5))*log(b*e*x/(d*x + c
) + a*e/(d*x + c)) + (415*a^3*b^4*c^4 - 576*a^4*b^3*c^3*d + 216*a^5*b^2*c^2
*d^2 - 64*a^6*b*c*d^3 + 9*a^7*d^4 + 12*(48*b^7*c^4 - 84*a*b^6*c^3*d + 52*a^
2*b^5*c^2*d^2 - 19*a^3*b^4*c*d^3 + 3*a^4*b^3*d^4)*x^3 + 6*(252*a*b^6*c^4 -
400*a^2*b^5*c^3*d + 203*a^3*b^4*c^2*d^2 - 64*a^4*b^3*c*d^3 + 9*a^5*b^2*d^4)
*x^2 - 72*(4*a^4*b^3*c^3*d - 6*a^5*b^2*c^2*d^2 + 4*a^6*b*c*d^3 - a^7*d^4 +
(4*b^7*c^3*d - 6*a*b^6*c^2*d^2 + 4*a^2*b^5*c*d^3 - a^3*b^4*d^4)*x^4 + 4*(4*
a*b^6*c^3*d - 6*a^2*b^5*c^2*d^2 + 4*a^3*b^4*c*d^3 - a^4*b^3*d^4)*x^3 + 6*(4
*a^2*b^5*c^3*d - 6*a^3*b^4*c^2*d^2 + 4*a^4*b^3*c*d^3 - a^5*b^2*d^4)*x^2 + 4
*(4*a^3*b^4*c^3*d - 6*a^4*b^3*c^2*d^2 + 4*a^5*b^2*c*d^3 - a^6*b*d^4)*x)*log
(b*x + a)^2 - 72*(4*a^4*b^3*c^3*d - 6*a^5*b^2*c^2*d^2 + 4*a^6*b*c*d^3 - a^7
*d^4 + (4*b^7*c^3*d - 6*a*b^6*c^2*d^2 + 4*a^2*b^5*c*d^3 - a^3*b^4*d^4)*x^4
+ 4*(4*a*b^6*c^3*d - 6*a^2*b^5*c^2*d^2 + 4*a^3*b^4*c*d^3 - a^4*b^3*d^4)*x^3
 + 6*(4*a^2*b^5*c^3*d - 6*a^3*b^4*c^2*d^2 + 4*a^4*b^3*c*d^3 - a^5*b^2*d^4)*
x^2 + 4*(4*a^3*b^4*c^3*d - 6*a^4*b^3*c^2*d^2 + 4*a^5*b^2*c*d^3 - a^6*b*d^4)
*x)*log(d*x + c)^2 + 4*(340*a^2*b^5*c^4 - 501*a^3*b^4*c^3*d + 216*a^4*b^3*c
^2*d^2 - 64*a^5*b^2*c*d^3 + 9*a^6*b*d^4)*x + 12*(48*a^4*b^3*c^3*d - 36*a^5*
b^2*c^2*d^2 + 16*a^6*b*c*d^3 - 3*a^7*d^4 + (48*b^7*c^3*d - 36*a*b^6*c^2*d^2
 + 16*a^2*b^5*c*d^3 - 3*a^3*b^4*d^4)*x^4 + 4*(48*a*b^6*c^3*d - 36*a^2*b^5*c
^2*d^2 + 16*a^3*b^4*c*d^3 - 3*a^4*b^3*d^4)*x^3 + 6*(48*a^2*b^5*c^3*d - 36*a
^3*b^4*c^2*d^2 + 16*a^4*b^3*c*d^3 - 3*a^5*b^2*d^4)*x^2 + 4*(48*a^3*b^4*c^3*
d - 36*a^4*b^3*c^2*d^2 + 16*a^5*b^2*c*d^3 - 3*a^6*b*d^4)*x)*log(b*x + a) -
12*(48*a^4*b^3*c^3*d - 36*a^5*b^2*c^2*d^2 + 16*a^6*b*c*d^3 - 3*a^7*d^4 + (4
8*b^7*c^3*d - 36*a*b^6*c^2*d^2 + 16*a^2*b^5*c*d^3 - 3*a^3*b^4*d^4)*x^4 + 4*
(48*a*b^6*c^3*d - 36*a^2*b^5*c^2*d^2 + 16*a^3*b^4*c*d^3 - 3*a^4*b^3*d^4)*x^
3 + 6*(48*a^2*b^5*c^3*d - 36*a^3*b^4*c^2*d^2 + 16*a^4*b^3*c*d^3 - 3*a^5*b^2
*d^4)*x^2 + 4*(48*a^3*b^4*c^3*d - 36*a^4*b^3*c^2*d^2 + 16*a^5*b^2*c*d^3 - 3
*a^6*b*d^4)*x - 12*(4*a^4*b^3*c^3*d - 6*a^5*b^2*c^2*d^2 + 4*a^6*b*c*d^3 - a
^7*d^4 + (4*b^7*c^3*d - 6*a*b^6*c^2*d^2 + 4*a^2*b^5*c*d^3 - a^3*b^4*d^4)*x^
4 + 4*(4*a*b^6*c^3*d - 6*a^2*b^5*c^2*d^2 + 4*a^3*b^4*c*d^3 - a^4*b^3*d^4)*x
^3 + 6*(4*a^2*b^5*c^3*d - 6*a^3*b^4*c^2*d^2 + 4*a^4*b^3*c*d^3 - a^5*b^2*d^4
```

)*x^2 + 4*(4*a^3*b^4*c^3*d - 6*a^4*b^3*c^2*d^2 + 4*a^5*b^2*c*d^3 - a^6*b*d^
4)*x)*log(b*x + a))*log(d*x + c))/(a^4*b^8*c^4*g^5 - 4*a^5*b^7*c^3*d*g^5 +
6*a^6*b^6*c^2*d^2*g^5 - 4*a^7*b^5*c*d^3*g^5 + a^8*b^4*d^4*g^5 + (b^12*c^4*g
^5 - 4*a*b^11*c^3*d*g^5 + 6*a^2*b^10*c^2*d^2*g^5 - 4*a^3*b^9*c*d^3*g^5 + a^
4*b^8*d^4*g^5)*x^4 + 4*(a*b^11*c^4*g^5 - 4*a^2*b^10*c^3*d*g^5 + 6*a^3*b^9*c
^2*d^2*g^5 - 4*a^4*b^8*c*d^3*g^5 + a^5*b^7*d^4*g^5)*x^3 + 6*(a^2*b^10*c^4*g
^5 - 4*a^3*b^9*c^3*d*g^5 + 6*a^4*b^8*c^2*d^2*g^5 - 4*a^5*b^7*c*d^3*g^5 + a^
6*b^6*d^4*g^5)*x^2 + 4*(a^3*b^9*c^4*g^5 - 4*a^4*b^8*c^3*d*g^5 + 6*a^5*b^7*c
^2*d^2*g^5 - 4*a^6*b^6*c*d^3*g^5 + a^7*b^5*d^4*g^5)*x))*B^2*d^3*i^3 - 1/24*
A*B*d^3*i^3*(12*(4*b^3*x^3 + 6*a*b^2*x^2 + 4*a^2*b*x + a^3)*log(b*e*x/(d*x
+ c) + a*e/(d*x + c))/(b^8*g^5*x^4 + 4*a*b^7*g^5*x^3 + 6*a^2*b^6*g^5*x^2 +
4*a^3*b^5*g^5*x + a^4*b^4*g^5) + (25*a^3*b^3*c^3 - 23*a^4*b^2*c^2*d + 13*a^
5*b*c*d^2 - 3*a^6*d^3 + 12*(4*b^6*c^3 - 6*a*b^5*c^2*d + 4*a^2*b^4*c*d^2 - a
^3*b^3*d^3)*x^3 + 6*(18*a*b^5*c^3 - 22*a^2*b^4*c^2*d + 13*a^3*b^3*c*d^2 - 3
*a^4*b^2*d^3)*x^2 + 4*(22*a^2*b^4*c^3 - 23*a^3*b^3*c^2*d + 13*a^4*b^2*c*d^2
 - 3*a^5*b*d^3)*x)/((b^11*c^3 - 3*a*b^10*c^2*d + 3*a^2*b^9*c*d^2 - a^3*b^8*
d^3)*g^5*x^4 + 4*(a*b^10*c^3 - 3*a^2*b^9*c^2*d + 3*a^3*b^8*c*d^2 - a^4*b^7*
d^3)*g^5*x^3 + 6*(a^2*b^9*c^3 - 3*a^3*b^8*c^2*d + 3*a^4*b^7*c*d^2 - a^5*b^6
*d^3)*g^5*x^2 + 4*(a^3*b^8*c^3 - 3*a^4*b^7*c^2*d + 3*a^5*b^6*c*d^2 - a^6*b^
5*d^3)*g^5*x + (a^4*b^7*c^3 - 3*a^5*b^6*c^2*d + 3*a^6*b^5*c*d^2 - a^7*b^4*d
^3)*g^5) + 12*(4*b^3*c^3*d - 6*a*b^2*c^2*d^2 + 4*a^2*b*c*d^3 - a^3*d^4)*log
(b*x + a)/((b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*c^2*d^2 - 4*a^3*b^5*c*d^3 +
 a^4*b^4*d^4)*g^5) - 12*(4*b^3*c^3*d - 6*a*b^2*c^2*d^2 + 4*a^2*b*c*d^3 - a^
3*d^4)*log(d*x + c)/((b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*c^2*d^2 - 4*a^3*b
^5*c*d^3 + a^4*b^4*d^4)*g^5)) - 1/24*A*B*c*d^2*i^3*(12*(6*b^2*x^2 + 4*a*b*x
 + a^2)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3
 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) + (13*a^2*b^3*c^3 - 7
5*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7*a^5*d^3 - 12*(6*b^5*c^2*d - 4*a*b^4*c*
d^2 + a^2*b^3*d^3)*x^3 + 6*(6*b^5*c^3 - 46*a*b^4*c^2*d + 29*a^2*b^3*c*d^2 -
 7*a^3*b^2*d^3)*x^2 + 4*(10*a*b^4*c^3 - 63*a^2*b^3*c^2*d + 33*a^3*b^2*c*d^2
 - 7*a^4*b*d^3)*x)/((b^10*c^3 - 3*a*b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7*d
^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2*b^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^
3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^3*b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5*d
^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a^4*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^4*
d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*b^5*c^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d^3
)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*log(b*x + a)/((b^7*c^4
- 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) +
 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*log(d*x + c)/((b^7*c^4 - 4*a*b^
6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5)) - 1/24*A
*B*c^2*d*i^3*(12*(4*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^5*
x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5)
+ (7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4
*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*
x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/(
(b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^
8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b
^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*
b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5
*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^
3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a
^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^
6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*
g^5)) + 1/24*A*B*c^3*i^3*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23
*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d
- 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*
d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d
^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*
d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c
*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^

```
2 - a^7*b*d^3)*g^5) - 12*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^5*g^5*x^4
+ 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) + 12*d
^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c
*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*
a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5)) - 1/4*B^2*c^3*i^3*log(
b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b
^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) - 1/4*(4*b*x + a)*A^2*c^2*d*i^3/(
b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b
^2*g^5) - 1/4*(6*b^2*x^2 + 4*a*b*x + a^2)*A^2*c*d^2*i^3/(b^7*g^5*x^4 + 4*a*
b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/4*(4*b
^3*x^3 + 6*a*b^2*x^2 + 4*a^2*b*x + a^3)*A^2*d^3*i^3/(b^8*g^5*x^4 + 4*a*b^7*
g^5*x^3 + 6*a^2*b^6*g^5*x^2 + 4*a^3*b^5*g^5*x + a^4*b^4*g^5) - 1/4*A^2*c^3*
i^3/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x +
a^4*b*g^5)
```

mupad [B] time = 10.43, size = 1565, normalized size = 10.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
5,x)
```

```
[Out] -(24*A^2*a^4*d^4*i^3 - 24*A^2*b^4*c^4*i^3 + 3*B^2*a^4*d^4*i^3 - 3*B^2*b^4*c
^4*i^3 + 12*A*B*a^4*d^4*i^3 - 12*A*B*b^4*c^4*i^3 - 24*B^2*b^4*c^4*i^3*log((
e*(a + b*x))/(c + d*x))^2 + B^2*a^4*d^4*i^3*atan((a*d*1i + b*c*1i + b*d*x*2
i)/(a*d - b*c))*24i + 12*B^2*a^4*d^4*i^3*log((e*(a + b*x))/(c + d*x)) - 12*
B^2*b^4*c^4*i^3*log((e*(a + b*x))/(c + d*x)) - 24*B^2*b^4*d^4*i^3*x^4*log((
e*(a + b*x))/(c + d*x))^2 + 96*A^2*a^3*b*d^4*i^3*x + 12*B^2*a^3*b*d^4*i^3*x
 - 96*A^2*b^4*c^3*d*i^3*x - 12*B^2*b^4*c^3*d*i^3*x + B^2*b^4*d^4*i^3*x^4*at
an((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*24i + A*B*a^4*d^4*i^3*atan((a*
d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*96i + 96*A^2*a*b^3*d^4*i^3*x^3 + 12*
B^2*a*b^3*d^4*i^3*x^3 - 96*A^2*b^4*c*d^3*i^3*x^3 - 12*B^2*b^4*c*d^3*i^3*x^3
 + 48*A*B*a^4*d^4*i^3*log((e*(a + b*x))/(c + d*x)) - 48*A*B*b^4*c^4*i^3*log
((e*(a + b*x))/(c + d*x)) + 144*A^2*a^2*b^2*d^4*i^3*x^2 + 18*B^2*a^2*b^2*d^
4*i^3*x^2 - 144*A^2*b^4*c^2*d^2*i^3*x^2 - 18*B^2*b^4*c^2*d^2*i^3*x^2 + 48*A
*B*a^3*b*d^4*i^3*x - 48*A*B*b^4*c^3*d*i^3*x + 48*B^2*a*b^3*d^4*i^3*x^3*log(
(e*(a + b*x))/(c + d*x)) - 96*B^2*b^4*c^3*d*i^3*x*log((e*(a + b*x))/(c + d*
x))^2 - 48*B^2*b^4*c*d^3*i^3*x^3*log((e*(a + b*x))/(c + d*x)) + A*B*b^4*d^4
*i^3*x^4*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*96i + B^2*a^3*b*d^4
*i^3*x*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*96i + 48*A*B*a*b^3*d^
4*i^3*x^3 - 48*A*B*b^4*c*d^3*i^3*x^3 + 72*B^2*a^2*b^2*d^4*i^3*x^2*log((e*(a
 + b*x))/(c + d*x)) - 72*B^2*b^4*c^2*d^2*i^3*x^2*log((e*(a + b*x))/(c + d*x
)) - 96*B^2*b^4*c*d^3*i^3*x^3*log((e*(a + b*x))/(c + d*x))^2 + B^2*a*b^3*d^
4*i^3*x^3*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*96i + 48*B^2*a^3*b
*d^4*i^3*x*log((e*(a + b*x))/(c + d*x)) - 48*B^2*b^4*c^3*d*i^3*x*log((e*(a
+ b*x))/(c + d*x)) + 72*A*B*a^2*b^2*d^4*i^3*x^2 - 72*A*B*b^4*c^2*d^2*i^3*x^
2 - 144*B^2*b^4*c^2*d^2*i^3*x^2*log((e*(a + b*x))/(c + d*x))^2 + B^2*a^2*b^
2*d^4*i^3*x^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*144i + A*B*a^3
*b*d^4*i^3*x*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*384i + 288*A*B*
a^2*b^2*d^4*i^3*x^2*log((e*(a + b*x))/(c + d*x)) - 288*A*B*b^4*c^2*d^2*i^3*
x^2*log((e*(a + b*x))/(c + d*x)) + A*B*a*b^3*d^4*i^3*x^3*atan((a*d*1i + b*c
*1i + b*d*x*2i)/(a*d - b*c))*384i + 192*A*B*a^3*b*d^4*i^3*x*log((e*(a + b*x
))/(c + d*x)) - 192*A*B*b^4*c^3*d*i^3*x*log((e*(a + b*x))/(c + d*x)) + A*B*
a^2*b^2*d^4*i^3*x^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*576i + 1
92*A*B*a*b^3*d^4*i^3*x^3*log((e*(a + b*x))/(c + d*x)) - 192*A*B*b^4*c*d^3*i
^3*x^3*log((e*(a + b*x))/(c + d*x)))/(96*b^4*g^5*(a*d - b*c)*(a + b*x)^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**5,x)
```

```
[Out] Timed out
```

3.82 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^6}\,dx$

Optimal. Leaf size=299

$$-\frac{bi^3(c+dx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{5g^6(a+bx)^5(bc-ad)^2}-\frac{2bBi^3(c+dx)^5\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{25g^6(a+bx)^5(bc-ad)^2}+\frac{di^3(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{4g^6(a+bx)^4(bc-ad)^2}$$

```
[Out] 1/32*B^2*d*i^3*(d*x+c)^4/(-a*d+b*c)^2/g^6/(b*x+a)^4-2/125*b*B^2*i^3*(d*x+c)
^5/(-a*d+b*c)^2/g^6/(b*x+a)^5+1/8*B*d*i^3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+
c)))/(-a*d+b*c)^2/g^6/(b*x+a)^4-2/25*b*B*i^3*(d*x+c)^5*(A+B*ln(e*(b*x+a)/(d
*x+c)))/(-a*d+b*c)^2/g^6/(b*x+a)^5+1/4*d*i^3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d
*x+c)))^2/(-a*d+b*c)^2/g^6/(b*x+a)^4-1/5*b*i^3*(d*x+c)^5*(A+B*ln(e*(b*x+a)/
(d*x+c)))^2/(-a*d+b*c)^2/g^6/(b*x+a)^5
```

Rubi [C] time = 5.20, antiderivative size = 1061, normalized size of antiderivative = 3.55, number of steps used = 146, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.262, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{B^2i^3\log^2(a+bx)d^5}{20b^4(bc-ad)^2g^6}-\frac{B^2i^3\log^2(c+dx)d^5}{20b^4(bc-ad)^2g^6}+\frac{9B^2i^3\log(a+bx)d^5}{200b^4(bc-ad)^2g^6}+\frac{Bi^3\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)d^5}{10b^4(bc-ad)^2g^6}-\frac{9B}{2}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^
6,x]
```

```
[Out] (-2*B^2*(b*c - a*d)^3*i^3)/(125*b^4*g^6*(a + b*x)^5) - (39*B^2*d*(b*c - a*d
)^2*i^3)/(800*b^4*g^6*(a + b*x)^4) - (7*B^2*d^2*(b*c - a*d)*i^3)/(200*b^4*g
^6*(a + b*x)^3) + (11*B^2*d^3*i^3)/(400*b^4*g^6*(a + b*x)^2) + (9*B^2*d^4*i
^3)/(200*b^4*(b*c - a*d)*g^6*(a + b*x)) + (9*B^2*d^5*i^3*Log[a + b*x])/(200
*b^4*(b*c - a*d)^2*g^6) - (B^2*d^5*i^3*Log[a + b*x]^2)/(20*b^4*(b*c - a*d)^
2*g^6) - (2*B*(b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(25*b
^4*g^6*(a + b*x)^5) - (11*B*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c
 + d*x)]))/(40*b^4*g^6*(a + b*x)^4) - (3*B*d^2*(b*c - a*d)*i^3*(A + B*Log[(
e*(a + b*x))/(c + d*x)]))/(10*b^4*g^6*(a + b*x)^3) - (B*d^3*i^3*(A + B*Log[
(e*(a + b*x))/(c + d*x)]))/(20*b^4*g^6*(a + b*x)^2) + (B*d^4*i^3*(A + B*Log
[(e*(a + b*x))/(c + d*x)]))/(10*b^4*(b*c - a*d)*g^6*(a + b*x)) + (B*d^5*i^3
*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(10*b^4*(b*c - a*d)^2*g
^6) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(5*b^4*g^6
*(a + b*x)^5) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])
^2)/(4*b^4*g^6*(a + b*x)^4) - (d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x))
/(c + d*x)])^2)/(b^4*g^6*(a + b*x)^3) - (d^3*i^3*(A + B*Log[(e*(a + b*x))/(
c + d*x)])^2)/(2*b^4*g^6*(a + b*x)^2) - (9*B^2*d^5*i^3*Log[c + d*x])/(200*b
^4*(b*c - a*d)^2*g^6) + (B^2*d^5*i^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[
c + d*x])/(10*b^4*(b*c - a*d)^2*g^6) - (B*d^5*i^3*(A + B*Log[(e*(a + b*x))/
(c + d*x)])*Log[c + d*x])/(10*b^4*(b*c - a*d)^2*g^6) - (B^2*d^5*i^3*Log[c +
 d*x]^2)/(20*b^4*(b*c - a*d)^2*g^6) + (B^2*d^5*i^3*Log[a + b*x]*Log[(b*(c +
 d*x))/(b*c - a*d)])/(10*b^4*(b*c - a*d)^2*g^6) + (B^2*d^5*i^3*PolyLog[2, -
((d*(a + b*x))/(b*c - a*d))])/(10*b^4*(b*c - a*d)^2*g^6) + (B^2*d^5*i^3*Pol
yLog[2, (b*(c + d*x))/(b*c - a*d)])/(10*b^4*(b*c - a*d)^2*g^6)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(82c+82dx)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^6}\,dx = \int \left(\frac{551368(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^6(a+bx)^6} + \frac{1654104d(bc-ad)^2}{b^3g^6(\ldots}\right.$$

$$= \frac{(551368d^3)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^3}dx}{b^3g^6} + \frac{(1654104d^2(bc-ad))\int \frac{(A+B\log}{(\ldots}}{b^3g^6}$$

$$= -\frac{551368(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{5b^4g^6(a+bx)^5} - \frac{413526d(bc-ad)^2(A}{b^4g^6(a+}$$

$$= -\frac{551368(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{5b^4g^6(a+bx)^5} - \frac{413526d(bc-ad)^2(A}{b^4g^6(a+}$$

$$= -\frac{551368(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{5b^4g^6(a+bx)^5} - \frac{413526d(bc-ad)^2(A}{b^4g^6(a+}$$

$$= -\frac{551368(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{5b^4g^6(a+bx)^5} - \frac{413526d(bc-ad)^2(A}{b^4g^6(a+}$$

$$= -\frac{1102736B(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{25b^4g^6(a+bx)^5} - \frac{758131Bd(bc-ad)^2(}{5b^4g^6(a}$$

$$= -\frac{1102736B(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{25b^4g^6(a+bx)^5} - \frac{758131Bd(bc-ad)^2(}{5b^4g^6(a}$$

$$= -\frac{1102736B(bc-ad)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{25b^4g^6(a+bx)^5} - \frac{758131Bd(bc-ad)^2(}{5b^4g^6(a}$$

$$= -\frac{1102736B^2(bc-ad)^3}{125b^4g^6(a+bx)^5} - \frac{2687919B^2d(bc-ad)^2}{100b^4g^6(a+bx)^4} - \frac{482447B^2d^2(bc}{25b^4g^6(a+b}$$

$$= -\frac{1102736B^2(bc-ad)^3}{125b^4g^6(a+bx)^5} - \frac{2687919B^2d(bc-ad)^2}{100b^4g^6(a+bx)^4} - \frac{482447B^2d^2(bc}{25b^4g^6(a+b}$$

$$= -\frac{1102736B^2(bc-ad)^3}{125b^4g^6(a+bx)^5} - \frac{2687919B^2d(bc-ad)^2}{100b^4g^6(a+bx)^4} - \frac{482447B^2d^2(bc}{25b^4g^6(a+b}$$

$$= -\frac{1102736B^2(bc-ad)^3}{125b^4g^6(a+bx)^5} - \frac{2687919B^2d(bc-ad)^2}{100b^4g^6(a+bx)^4} - \frac{482447B^2d^2(bc}{25b^4g^6(a+b}$$

Mathematica [C] time = 4.20, size = 2289, normalized size = 7.66

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x)^6,x]
```

```
[Out] (i^3*(2000*a^2*B^2*d^2*(b*c - a*d)^3 - 825*a*B^2*d*(b*c - a*d)^4 - 192*B^2*
(b*c - a*d)^5 + 4000*a*b*B^2*d^2*(b*c - a*d)^3*x - 825*b*B^2*d*(b*c - a*d)^
4*x + 2000*b^2*B^2*d^2*(b*c - a*d)^3*x^2 - 3000*a^2*B^2*d^3*(b*c - a*d)^2*(
a + b*x) + 1100*a*B^2*d^2*(b*c - a*d)^3*(a + b*x) + 240*B^2*d*(b*c - a*d)^4
*(a + b*x) - 6000*a*b*B^2*d^3*(b*c - a*d)^2*x*(a + b*x) + 1100*b*B^2*d^2*(b
*c - a*d)^3*x*(a + b*x) - 3000*b^2*B^2*d^3*(b*c - a*d)^2*x^2*(a + b*x) + 60
00*a^2*B^2*d^4*(b*c - a*d)*(a + b*x)^2 - 6150*a*B^2*d^3*(b*c - a*d)^2*(a +
b*x)^2 + 3520*B^2*d^2*(-(b*c) + a*d)^3*(a + b*x)^2 + 12000*a*b*B^2*d^4*(b*c
 - a*d)*x*(a + b*x)^2 - 6150*b*B^2*d^3*(b*c - a*d)^2*x*(a + b*x)^2 + 6000*b
^2*B^2*d^4*(b*c - a*d)*x^2*(a + b*x)^2 + 18000*a*b*B^2*c*d^4*(a + b*x)^3 -
18000*a^2*B^2*d^5*(a + b*x)^3 + 12300*a*B^2*d^4*(b*c - a*d)*(a + b*x)^3 + 9
480*B^2*d^3*(b*c - a*d)^2*(a + b*x)^3 + 18000*b^2*B^2*c*d^4*x*(a + b*x)^3 -
 18000*a*b*B^2*d^5*x*(a + b*x)^3 + 12300*b*B^2*d^4*(b*c - a*d)*x*(a + b*x)^
3 - 16800*b*B^2*c*d^4*(a + b*x)^4 + 16800*a*B^2*d^5*(a + b*x)^4 + 18960*B^2
*d^4*(-(b*c) + a*d)*(a + b*x)^4 + 6000*a^2*B^2*d^5*(a + b*x)^3*Log[a + b*x]
 + 12000*a*b*B^2*d^5*x*(a + b*x)^3*Log[a + b*x] + 6000*b^2*B^2*d^5*x^2*(a +
 b*x)^3*Log[a + b*x] + 30300*a*B^2*d^5*(a + b*x)^4*Log[a + b*x] + 30300*b*B
^2*d^5*x*(a + b*x)^4*Log[a + b*x] - 35760*B^2*d^5*(a + b*x)^5*Log[a + b*x]
- 4500*a*B*d*(b*c - a*d)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 960*B*(b*
c - a*d)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 4500*b*B*d*(b*c - a*d)^4*
x*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6000*a*B*d^2*(b*c - a*d)^3*(a + b*
x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 1200*B*d*(b*c - a*d)^4*(a + b*x)*
(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 6000*b*B*d^2*(b*c - a*d)^3*x*(a + b*
x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 9000*a*B*d^3*(b*c - a*d)^2*(a + b
*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 9600*B*d^2*(-(b*c) + a*d)^3*(a
 + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 9000*b*B*d^3*(b*c - a*d)^2
*x*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 18000*a*B*d^4*(b*c -
a*d)*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 8400*B*d^3*(b*c - a
*d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 18000*b*B*d^4*(b*c
 - a*d)*x*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 16800*B*d^4*(-
(b*c) + a*d)*(a + b*x)^4*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 18000*a*B*d
^5*(a + b*x)^4*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 18000*b*
B*d^5*x*(a + b*x)^4*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 168
00*B*d^5*(a + b*x)^5*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 24
00*(b*c - a*d)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 9000*d*(b*c - a*d
)^4*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 12000*d^2*(-(b*c) +
a*d)^3*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 6000*d^3*(b*c -
 a*d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 6000*a^2*B^2*d
^5*(a + b*x)^3*Log[c + d*x] - 12000*a*b*B^2*d^5*x*(a + b*x)^3*Log[c + d*x]
- 6000*b^2*B^2*d^5*x^2*(a + b*x)^3*Log[c + d*x] - 30300*a*B^2*d^5*(a + b*x)
^4*Log[c + d*x] - 30300*b*B^2*d^5*x*(a + b*x)^4*Log[c + d*x] + 35760*B^2*d^
5*(a + b*x)^5*Log[c + d*x] - 18000*a*B*d^5*(a + b*x)^4*(A + B*Log[(e*(a + b
*x))/(c + d*x)])*Log[c + d*x] - 18000*b*B*d^5*x*(a + b*x)^4*(A + B*Log[(e*(
a + b*x))/(c + d*x)])*Log[c + d*x] + 16800*B*d^5*(a + b*x)^5*(A + B*Log[(e*
(a + b*x))/(c + d*x)])*Log[c + d*x] - 9000*a*B^2*d^5*(a + b*x)^4*(Log[a + b
*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a
+ b*x))/(-(b*c) + a*d)]) - 9000*b*B^2*d^5*x*(a + b*x)^4*(Log[a + b*x]*(Log[
a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(
-(b*c) + a*d)]) + 8400*B^2*d^5*(a + b*x)^5*(Log[a + b*x]*(Log[a + b*x] - 2*
Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)
]) + 9000*a*B^2*d^5*(a + b*x)^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log
[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 9000*b
*B^2*d^5*x*(a + b*x)^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x]
)*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) - 8400*B^2*d^5*(a
 + b*x)^5*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x
] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(12000*b^4*(b*c - a*d)^2*g^6
*(a + b*x)^5)
```

fricas [B] time = 0.95, size = 1045, normalized size = 3.49

$$20\left(\left(20\,AB + 9\,B^2\right)b^5cd^4 - \left(20\,AB + 9\,B^2\right)ab^4d^5\right)i^3x^4 - 10\left(\left(200\,A^2 + 20\,AB - 11\,B^2\right)b^5c^2d^3 - 50\left(8\,A^2 + 4\,AB + \right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, alg
orithm="fricas")
```

```
[Out] 1/4000*(20*((20*A*B + 9*B^2)*b^5*c*d^4 - (20*A*B + 9*B^2)*a*b^4*d^5)*i^3*x^
4 - 10*((200*A^2 + 20*A*B - 11*B^2)*b^5*c^2*d^3 - 50*(8*A^2 + 4*A*B + B^2)*
a*b^4*c*d^4 + (200*A^2 + 180*A*B + 61*B^2)*a^2*b^3*d^5)*i^3*x^3 - 10*(2*(20
0*A^2 + 60*A*B + 7*B^2)*b^5*c^3*d^2 - 75*(8*A^2 + 4*A*B + B^2)*a*b^4*c^2*d^
3 + (200*A^2 + 180*A*B + 61*B^2)*a^3*b^2*d^5)*i^3*x^2 - 5*((600*A^2 + 220*A
*B + 39*B^2)*b^5*c^4*d - 100*(8*A^2 + 4*A*B + B^2)*a*b^4*c^3*d^2 + (200*A^2
 + 180*A*B + 61*B^2)*a^4*b*d^5)*i^3*x - (32*(25*A^2 + 10*A*B + 2*B^2)*b^5*c
^5 - 125*(8*A^2 + 4*A*B + B^2)*a*b^4*c^4*d + (200*A^2 + 180*A*B + 61*B^2)*a
^5*d^5)*i^3 + 200*(B^2*b^5*d^5*i^3*x^5 + 5*B^2*a*b^4*d^5*i^3*x^4 - 10*(B^2*
b^5*c^2*d^3 - 2*B^2*a*b^4*c*d^4)*i^3*x^3 - 10*(2*B^2*b^5*c^3*d^2 - 3*B^2*a*
b^4*c^2*d^3)*i^3*x^2 - 5*(3*B^2*b^5*c^4*d - 4*B^2*a*b^4*c^3*d^2)*i^3*x - (4
*B^2*b^5*c^5 - 5*B^2*a*b^4*c^4*d)*i^3)*log((b*e*x + a*e)/(d*x + c))^2 + 20*
((20*A*B + 9*B^2)*b^5*d^5*i^3*x^5 + 5*(4*B^2*b^5*c*d^4 + 5*(4*A*B + B^2)*a*
b^4*d^5)*i^3*x^4 - 10*((20*A*B + B^2)*b^5*c^2*d^3 - 10*(4*A*B + B^2)*a*b^4*
c*d^4)*i^3*x^3 - 10*(2*(20*A*B + 3*B^2)*b^5*c^3*d^2 - 15*(4*A*B + B^2)*a*b^
4*c^2*d^3)*i^3*x^2 - 5*((60*A*B + 11*B^2)*b^5*c^4*d - 20*(4*A*B + B^2)*a*b^
4*c^3*d^2)*i^3*x - (16*(5*A*B + B^2)*b^5*c^5 - 25*(4*A*B + B^2)*a*b^4*c^4*d
)*i^3)*log((b*e*x + a*e)/(d*x + c)))/((b^11*c^2 - 2*a*b^10*c*d + a^2*b^9*d^
2)*g^6*x^5 + 5*(a*b^10*c^2 - 2*a^2*b^9*c*d + a^3*b^8*d^2)*g^6*x^4 + 10*(a^2
*b^9*c^2 - 2*a^3*b^8*c*d + a^4*b^7*d^2)*g^6*x^3 + 10*(a^3*b^8*c^2 - 2*a^4*b
^7*c*d + a^5*b^6*d^2)*g^6*x^2 + 5*(a^4*b^7*c^2 - 2*a^5*b^6*c*d + a^6*b^5*d^
2)*g^6*x + (a^5*b^6*c^2 - 2*a^6*b^5*c*d + a^7*b^4*d^2)*g^6)
```

giac [A] time = 4.34, size = 437, normalized size = 1.46

$$\left(800\,B^2bie^6\log\left(\frac{bxe+ae}{dx+c}\right)^2 - \frac{1000\,(bxe+ae)B^2die^5\log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c} + 1600\,ABbie^6\log\left(\frac{bxe+ae}{dx+c}\right) + 320\,B^2bie^6\log\left(\frac{bxe+ae}{dx+c}\right) - \frac{2000}{\quad}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, alg
orithm="giac")
```

```
[Out] 1/4000*(800*B^2*b*i*e^6*log((b*x*e + a*e)/(d*x + c))^2 - 1000*(b*x*e + a*e)
*B^2*d*i*e^5*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 1600*A*B*b*i*e^6*lo
g((b*x*e + a*e)/(d*x + c)) + 320*B^2*b*i*e^6*log((b*x*e + a*e)/(d*x + c)) -
 2000*(b*x*e + a*e)*A*B*d*i*e^5*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 50
0*(b*x*e + a*e)*B^2*d*i*e^5*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 800*A^
2*b*i*e^6 + 320*A*B*b*i*e^6 + 64*B^2*b*i*e^6 - 1000*(b*x*e + a*e)*A^2*d*i*e
^5/(d*x + c) - 500*(b*x*e + a*e)*A*B*d*i*e^5/(d*x + c) - 125*(b*x*e + a*e)*
B^2*d*i*e^5/(d*x + c))*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a
*d*e)*(b*c - a*d)))/((b*x*e + a*e)^5*b*c*g^6/(d*x + c)^5 - (b*x*e + a*e)^5*
a*d*g^6/(d*x + c)^5)
```

maple [B] time = 0.05, size = 1814, normalized size = 6.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^6,x)
```

```
[Out] 1/4*d^2*e^4*i^3/(a*d-b*c)^3/g^6*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^4*a-1/4*d*e^4*i^3/(a*d-b*c)^3/g^6*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^4*b*c-1/5*d*e^5*i^3/(a*d-b*c)^3/g^6*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)^5*a+1/5*e^5*i^3/(a*d-b*c)^3/g^6*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)
*b*c/d*e+b/d*e)^5*c+1/2*d^2*e^4*i^3/(a*d-b*c)^3/g^6*A*B/(1/(d*x+c)*a*e-1/(d
*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*d*e^4*i^3/(a*d
-b*c)^3/g^6*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)*b*c+1/8*d^2*e^4*i^3/(a*d-b*c)^3/g^6*A*B/(1/(d*x+c)*a*e-1/(d*
x+c)*b*c/d*e+b/d*e)^4*a-1/8*d*e^4*i^3/(a*d-b*c)^3/g^6*A*B/(1/(d*x+c)*a*e-1/
(d*x+c)*b*c/d*e+b/d*e)^4*b*c-2/5*d*e^5*i^3/(a*d-b*c)^3/g^6*A*B*b/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2/5*e^5*i
^3/(a*d-b*c)^3/g^6*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/25*d*e^5*i^3/(a*d-b*c)^3/g^6*A*B*b/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a+2/25*e^5*i^3/(a*d-b*c)^3/g^6*A*B*b^2/(1/(
d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*c+1/4*d^2*e^4*i^3/(a*d-b*c)^3/g^6*B^2
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^
2*a-1/4*d*e^4*i^3/(a*d-b*c)^3/g^6*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c+1/8*d^2*e^4*i^3/(a*d-b*c)^3/g^6*
B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*a-1/8*d*e^4*i^3/(a*d-b*c)^3/g^6*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c+1/32*d^2*e^4*i^3/(a*d-b*c)^3/g^6*
B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/32*d*e^4*i^3/(a*d-b*c)^3/
g^6*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c-1/5*d*e^5*i^3/(a*d-b*
c)^3/g^6*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)^2*a+1/5*e^5*i^3/(a*d-b*c)^3/g^6*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x
+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-2/25*d*e^5*i^3/(a*
d-b*c)^3/g^6*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)*a+2/25*e^5*i^3/(a*d-b*c)^3/g^6*B^2*b^2/(1/(d*x+c)*a*e-1/(
d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/125*d*e^5*i^3/(
a*d-b*c)^3/g^6*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a+2/125*e^5*
i^3/(a*d-b*c)^3/g^6*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*c
```

maxima [B] time = 16.44, size = 15765, normalized size = 52.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^6,x, alg
orithm="maxima")
```

```
[Out] -3/20*(5*b*x + a)*B^2*c^2*d*i^3*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^7
*g^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^
4*b^3*g^6*x + a^5*b^2*g^6) - 1/10*(10*b^2*x^2 + 5*a*b*x + a^2)*B^2*c*d^2*i^
3*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 1
0*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) - 1
/20*(10*b^3*x^3 + 10*a*b^2*x^2 + 5*a^2*b*x + a^3)*B^2*d^3*i^3*log(b*e*x/(d*
x + c) + a*e/(d*x + c))^2/(b^9*g^6*x^5 + 5*a*b^8*g^6*x^4 + 10*a^2*b^7*g^6*x
^3 + 10*a^3*b^6*g^6*x^2 + 5*a^4*b^5*g^6*x + a^5*b^4*g^6) - 1/9000*(60*((60*
b^4*d^4*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2 - 163*a^3*b
*c*d^3 + 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2
 - 13*a*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a*b^3*c^2*d^2
 + 43*a^2*b^2*c*d^3 - 77*a^3*b*d^4)*x)/((b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b
^8*c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c^4 - 4*a^2*
b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g^6*x^4 + 10
*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6
*b^4*d^4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d^2 -
```

```
4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5*b^5*c^3*d
+ 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*g^6*x + (a^5*b^5*c^4 -
 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d^4)*g^6) +
60*d^5*log(b*x + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3
*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) - 60*d^5*log(d*x + c)/((b^
6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2
*c*d^4 - a^5*b*d^5)*g^6))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (144*b^5*c
^5 - 1125*a*b^4*c^4*d + 4000*a^2*b^3*c^3*d^2 - 9000*a^3*b^2*c^2*d^3 + 18000
*a^4*b*c*d^4 - 12019*a^5*d^5 + 8220*(b^5*c*d^4 - a*b^4*d^5)*x^4 - 30*(77*b^
5*c^2*d^3 - 1250*a*b^4*c*d^4 + 1173*a^2*b^3*d^5)*x^3 + 10*(94*b^5*c^3*d^2 -
 975*a*b^4*c^2*d^3 + 6600*a^2*b^3*c*d^4 - 5719*a^3*b^2*d^5)*x^2 - 1800*(b^5
*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^
4*b*d^5*x + a^5*d^5)*log(b*x + a)^2 - 1800*(b^5*d^5*x^5 + 5*a*b^4*d^5*x^4 +
 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d^5)*log(d*x
 + c)^2 - 5*(81*b^5*c^4*d - 700*a*b^4*c^3*d^2 + 3000*a^2*b^3*c^2*d^3 - 1080
0*a^3*b^2*c*d^4 + 8419*a^4*b*d^5)*x + 8220*(b^5*d^5*x^5 + 5*a*b^4*d^5*x^4 +
 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d^5)*log(b*x
 + a) - 60*(137*b^5*d^5*x^5 + 685*a*b^4*d^5*x^4 + 1370*a^2*b^3*d^5*x^3 + 13
70*a^3*b^2*d^5*x^2 + 685*a^4*b*d^5*x + 137*a^5*d^5 - 60*(b^5*d^5*x^5 + 5*a*
b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5
*d^5)*log(b*x + a))*log(d*x + c))/(a^5*b^6*c^5*g^6 - 5*a^6*b^5*c^4*d*g^6 +
10*a^7*b^4*c^3*d^2*g^6 - 10*a^8*b^3*c^2*d^3*g^6 + 5*a^9*b^2*c*d^4*g^6 - a^1
0*b*d^5*g^6 + (b^11*c^5*g^6 - 5*a*b^10*c^4*d*g^6 + 10*a^2*b^9*c^3*d^2*g^6 -
 10*a^3*b^8*c^2*d^3*g^6 + 5*a^4*b^7*c*d^4*g^6 - a^5*b^6*d^5*g^6)*x^5 + 5*(a
*b^10*c^5*g^6 - 5*a^2*b^9*c^4*d*g^6 + 10*a^3*b^8*c^3*d^2*g^6 - 10*a^4*b^7*c
^2*d^3*g^6 + 5*a^5*b^6*c*d^4*g^6 - a^6*b^5*d^5*g^6)*x^4 + 10*(a^2*b^9*c^5*g
^6 - 5*a^3*b^8*c^4*d*g^6 + 10*a^4*b^7*c^3*d^2*g^6 - 10*a^5*b^6*c^2*d^3*g^6
+ 5*a^6*b^5*c*d^4*g^6 - a^7*b^4*d^5*g^6)*x^3 + 10*(a^3*b^8*c^5*g^6 - 5*a^4*
b^7*c^4*d*g^6 + 10*a^5*b^6*c^3*d^2*g^6 - 10*a^6*b^5*c^2*d^3*g^6 + 5*a^7*b^4
*c*d^4*g^6 - a^8*b^3*d^5*g^6)*x^2 + 5*(a^4*b^7*c^5*g^6 - 5*a^5*b^6*c^4*d*g^
6 + 10*a^6*b^5*c^3*d^2*g^6 - 10*a^7*b^4*c^2*d^3*g^6 + 5*a^8*b^3*c*d^4*g^6 -
 a^9*b^2*d^5*g^6)*x))*B^2*c^3*i^3 - 1/12000*(60*((27*a*b^4*c^4 - 148*a^2*b^
3*c^3*d + 352*a^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d^4 - 60*(5*b^5*c*
d^3 - a*b^4*d^4)*x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^2*b^3*d^4)*
x^3 - 10*(10*b^5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*d^3 - 47*a^3*b^2*
d^4)*x^2 + 5*(15*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^2*d^2 - 428*a^3*b
^2*c*d^3 + 77*a^4*b*d^4)*x)/((b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2*b^9*c^2*d^2
 - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a^2*b^9*c^3*d
 + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*x^4 + 10*(a^2*b^9
*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a^6*b^5*d^4)
*g^6*x^3 + 10*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 - 4*a^6*b^
5*c*d^3 + a^7*b^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d + 6*a^6*b
^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4 - 4*a^6*b^
5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6) - 60*(5*b
*c*d^4 - a*d^5)*log(b*x + a)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2
 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4
 - a*d^5)*log(d*x + c)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*
a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6))*log(b*e*x/(d*x + c)
+ a*e/(d*x + c)) + (549*a*b^5*c^5 - 4625*a^2*b^4*c^4*d + 19000*a^3*b^3*c^3*
d^2 - 63000*a^4*b^2*c^2*d^3 + 51875*a^5*b*c*d^4 - 3799*a^6*d^5 - 60*(625*b^
6*c^2*d^3 - 702*a*b^5*c*d^4 + 77*a^2*b^4*d^5)*x^4 + 30*(325*b^6*c^3*d^2 - 5
667*a*b^5*c^2*d^3 + 5975*a^2*b^4*c*d^4 - 633*a^3*b^3*d^5)*x^3 - 10*(350*b^6
*c^4*d - 3949*a*b^5*c^3*d^2 + 29475*a^2*b^4*c^2*d^3 - 28775*a^3*b^3*c*d^4 +
 2899*a^4*b^2*d^5)*x^2 + 1800*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b
^5*d^5)*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 + 10*(5*a^2*b^4*c*d^4 - a
^3*b^3*d^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5)*x^2 + 5*(5*a^4*b^2*c*d
^4 - a^5*b*d^5)*x)*log(b*x + a)^2 + 1800*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*
c*d^4 - a*b^5*d^5)*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 + 10*(5*a^2*b^
4*c*d^4 - a^3*b^3*d^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5)*x^2 + 5*(5*
```

```
a^4*b^2*c*d^4 - a^5*b*d^5)*x)*log(d*x + c)^2 + 5*(225*b^6*c^5 - 2201*a*b^5*
c^4*d + 10900*a^2*b^4*c^3*d^2 - 46200*a^3*b^3*c^2*d^3 + 41075*a^4*b^2*c*d^4
 - 3799*a^5*b*d^5)*x - 60*(625*a^5*b*c*d^4 - 77*a^6*d^5 + (625*b^6*c*d^4 -
77*a*b^5*d^5)*x^5 + 5*(625*a*b^5*c*d^4 - 77*a^2*b^4*d^5)*x^4 + 10*(625*a^2*
b^4*c*d^4 - 77*a^3*b^3*d^5)*x^3 + 10*(625*a^3*b^3*c*d^4 - 77*a^4*b^2*d^5)*x
^2 + 5*(625*a^4*b^2*c*d^4 - 77*a^5*b*d^5)*x)*log(b*x + a) + 60*(625*a^5*b*c
*d^4 - 77*a^6*d^5 + (625*b^6*c*d^4 - 77*a*b^5*d^5)*x^5 + 5*(625*a*b^5*c*d^4
 - 77*a^2*b^4*d^5)*x^4 + 10*(625*a^2*b^4*c*d^4 - 77*a^3*b^3*d^5)*x^3 + 10*(
625*a^3*b^3*c*d^4 - 77*a^4*b^2*d^5)*x^2 + 5*(625*a^4*b^2*c*d^4 - 77*a^5*b*d
^5)*x - 60*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b^5*d^5)*x^5 + 5*(5*
a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 + 10*(5*a^2*b^4*c*d^4 - a^3*b^3*d^5)*x^3 + 1
0*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5)*x^2 + 5*(5*a^4*b^2*c*d^4 - a^5*b*d^5)*x)*
log(b*x + a))*log(d*x + c))/(a^5*b^7*c^5*g^6 - 5*a^6*b^6*c^4*d*g^6 + 10*a^7
*b^5*c^3*d^2*g^6 - 10*a^8*b^4*c^2*d^3*g^6 + 5*a^9*b^3*c*d^4*g^6 - a^10*b^2*
d^5*g^6 + (b^12*c^5*g^6 - 5*a*b^11*c^4*d*g^6 + 10*a^2*b^10*c^3*d^2*g^6 - 10
*a^3*b^9*c^2*d^3*g^6 + 5*a^4*b^8*c*d^4*g^6 - a^5*b^7*d^5*g^6)*x^5 + 5*(a*b^
11*c^5*g^6 - 5*a^2*b^10*c^4*d*g^6 + 10*a^3*b^9*c^3*d^2*g^6 - 10*a^4*b^8*c^2
*d^3*g^6 + 5*a^5*b^7*c*d^4*g^6 - a^6*b^6*d^5*g^6)*x^4 + 10*(a^2*b^10*c^5*g^
6 - 5*a^3*b^9*c^4*d*g^6 + 10*a^4*b^8*c^3*d^2*g^6 - 10*a^5*b^7*c^2*d^3*g^6 +
 5*a^6*b^6*c*d^4*g^6 - a^7*b^5*d^5*g^6)*x^3 + 10*(a^3*b^9*c^5*g^6 - 5*a^4*b
^8*c^4*d*g^6 + 10*a^5*b^7*c^3*d^2*g^6 - 10*a^6*b^6*c^2*d^3*g^6 + 5*a^7*b^5*
c*d^4*g^6 - a^8*b^4*d^5*g^6)*x^2 + 5*(a^4*b^8*c^5*g^6 - 5*a^5*b^7*c^4*d*g^6
 + 10*a^6*b^6*c^3*d^2*g^6 - 10*a^7*b^5*c^2*d^3*g^6 + 5*a^8*b^4*c*d^4*g^6 -
a^9*b^3*d^5*g^6)*x))*B^2*c^2*d*i^3 - 1/18000*(60*((47*a^2*b^4*c^4 - 278*a^3
*b^3*c^3*d + 822*a^4*b^2*c^2*d^2 - 278*a^5*b*c*d^3 + 47*a^6*d^4 + 60*(10*b^
6*c^2*d^2 - 5*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 - 30*(10*b^6*c^3*d - 95*a*b^5*
c^2*d^2 + 46*a^2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^3 + 10*(20*b^6*c^4 - 140*a*b^
5*c^3*d + 537*a^2*b^4*c^2*d^2 - 248*a^3*b^3*c*d^3 + 47*a^4*b^2*d^4)*x^2 + 5
*(35*a*b^5*c^4 - 218*a^2*b^4*c^3*d + 702*a^3*b^3*c^2*d^2 - 278*a^4*b^2*c*d^
3 + 47*a^5*b*d^4)*x)/((b^12*c^4 - 4*a*b^11*c^3*d + 6*a^2*b^10*c^2*d^2 - 4*a
^3*b^9*c*d^3 + a^4*b^8*d^4)*g^6*x^5 + 5*(a*b^11*c^4 - 4*a^2*b^10*c^3*d + 6*
a^3*b^9*c^2*d^2 - 4*a^4*b^8*c*d^3 + a^5*b^7*d^4)*g^6*x^4 + 10*(a^2*b^10*c^4
 - 4*a^3*b^9*c^3*d + 6*a^4*b^8*c^2*d^2 - 4*a^5*b^7*c*d^3 + a^6*b^6*d^4)*g^6
*x^3 + 10*(a^3*b^9*c^4 - 4*a^4*b^8*c^3*d + 6*a^5*b^7*c^2*d^2 - 4*a^6*b^6*c*
d^3 + a^7*b^5*d^4)*g^6*x^2 + 5*(a^4*b^8*c^4 - 4*a^5*b^7*c^3*d + 6*a^6*b^6*c
^2*d^2 - 4*a^7*b^5*c*d^3 + a^8*b^4*d^4)*g^6*x + (a^5*b^7*c^4 - 4*a^6*b^6*c^
3*d + 6*a^7*b^5*c^2*d^2 - 4*a^8*b^4*c*d^3 + a^9*b^3*d^4)*g^6) + 60*(10*b^2*
c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(b*x + a)/((b^8*c^5 - 5*a*b^7*c^4*d + 1
0*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6
) - 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(d*x + c)/((b^8*c^5 - 5*
a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a
^5*b^3*d^5)*g^6))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + (1489*a^2*b^5*c^5
 - 14375*a^3*b^4*c^4*d + 85000*a^4*b^3*c^3*d^2 - 85000*a^5*b^2*c^2*d^3 + 143
75*a^6*b*c*d^4 - 1489*a^7*d^5 + 60*(1100*b^7*c^3*d^2 - 1425*a*b^6*c^2*d^3 +
 372*a^2*b^5*c*d^4 - 47*a^3*b^4*d^5)*x^4 - 30*(500*b^7*c^4*d - 9825*a*b^6*c
^3*d^2 + 11937*a^2*b^5*c^2*d^3 - 2975*a^3*b^4*c*d^4 + 363*a^4*b^3*d^5)*x^3
 + 10*(400*b^7*c^5 - 5450*a*b^6*c^4*d + 49189*a^2*b^5*c^3*d^2 - 55525*a^3*b^
4*c^2*d^3 + 12875*a^4*b^3*c*d^4 - 1489*a^5*b^2*d^5)*x^2 - 1800*(10*a^5*b^2*
c^2*d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a*b^6*c*d^4 + a^2*b
^5*d^5)*x^5 + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3*b^4*d^5)*x^4 + 10
*(10*a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^3 + 10*(10*a^3*b^4*
c^2*d^3 - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2 + 5*(10*a^4*b^3*c^2*d^3 - 5*a^
5*b^2*c*d^4 + a^6*b*d^5)*x)*log(b*x + a)^2 - 1800*(10*a^5*b^2*c^2*d^3 - 5*a
^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a*b^6*c*d^4 + a^2*b^5*d^5)*x^5 +
 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3*b^4*d^5)*x^4 + 10*(10*a^2*b^5*
c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^3 + 10*(10*a^3*b^4*c^2*d^3 - 5*a
^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2 + 5*(10*a^4*b^3*c^2*d^3 - 5*a^5*b^2*c*d^4 +
 a^6*b*d^5)*x)*log(d*x + c)^2 + 5*(925*a*b^6*c^5 - 9911*a^2*b^5*c^4*d + 679
00*a^3*b^4*c^3*d^2 - 71800*a^4*b^3*c^2*d^3 + 14375*a^5*b^2*c*d^4 - 1489*a^6
```

```
*b*d^5)*x + 60*(1100*a^5*b^2*c^2*d^3 - 325*a^6*b*c*d^4 + 47*a^7*d^5 + (1100
*b^7*c^2*d^3 - 325*a*b^6*c*d^4 + 47*a^2*b^5*d^5)*x^5 + 5*(1100*a*b^6*c^2*d^
3 - 325*a^2*b^5*c*d^4 + 47*a^3*b^4*d^5)*x^4 + 10*(1100*a^2*b^5*c^2*d^3 - 32
5*a^3*b^4*c*d^4 + 47*a^4*b^3*d^5)*x^3 + 10*(1100*a^3*b^4*c^2*d^3 - 325*a^4*
b^3*c*d^4 + 47*a^5*b^2*d^5)*x^2 + 5*(1100*a^4*b^3*c^2*d^3 - 325*a^5*b^2*c*d
^4 + 47*a^6*b*d^5)*x)*log(b*x + a) - 60*(1100*a^5*b^2*c^2*d^3 - 325*a^6*b*c
*d^4 + 47*a^7*d^5 + (1100*b^7*c^2*d^3 - 325*a*b^6*c*d^4 + 47*a^2*b^5*d^5)*x
^5 + 5*(1100*a*b^6*c^2*d^3 - 325*a^2*b^5*c*d^4 + 47*a^3*b^4*d^5)*x^4 + 10*(
1100*a^2*b^5*c^2*d^3 - 325*a^3*b^4*c*d^4 + 47*a^4*b^3*d^5)*x^3 + 10*(1100*a
^3*b^4*c^2*d^3 - 325*a^4*b^3*c*d^4 + 47*a^5*b^2*d^5)*x^2 + 5*(1100*a^4*b^3*
c^2*d^3 - 325*a^5*b^2*c*d^4 + 47*a^6*b*d^5)*x - 60*(10*a^5*b^2*c^2*d^3 - 5*
a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a*b^6*c*d^4 + a^2*b^5*d^5)*x^5
+ 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3*b^4*d^5)*x^4 + 10*(10*a^2*b^5
*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^3 + 10*(10*a^3*b^4*c^2*d^3 - 5*
a^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2 + 5*(10*a^4*b^3*c^2*d^3 - 5*a^5*b^2*c*d^4
+ a^6*b*d^5)*x)*log(b*x + a))*log(d*x + c))/(a^5*b^8*c^5*g^6 - 5*a^6*b^7*c^
4*d*g^6 + 10*a^7*b^6*c^3*d^2*g^6 - 10*a^8*b^5*c^2*d^3*g^6 + 5*a^9*b^4*c*d^4
*g^6 - a^10*b^3*d^5*g^6 + (b^13*c^5*g^6 - 5*a*b^12*c^4*d*g^6 + 10*a^2*b^11*
c^3*d^2*g^6 - 10*a^3*b^10*c^2*d^3*g^6 + 5*a^4*b^9*c*d^4*g^6 - a^5*b^8*d^5*g
^6)*x^5 + 5*(a*b^12*c^5*g^6 - 5*a^2*b^11*c^4*d*g^6 + 10*a^3*b^10*c^3*d^2*g^
6 - 10*a^4*b^9*c^2*d^3*g^6 + 5*a^5*b^8*c*d^4*g^6 - a^6*b^7*d^5*g^6)*x^4 + 1
0*(a^2*b^11*c^5*g^6 - 5*a^3*b^10*c^4*d*g^6 + 10*a^4*b^9*c^3*d^2*g^6 - 10*a^
5*b^8*c^2*d^3*g^6 + 5*a^6*b^7*c*d^4*g^6 - a^7*b^6*d^5*g^6)*x^3 + 10*(a^3*b^
10*c^5*g^6 - 5*a^4*b^9*c^4*d*g^6 + 10*a^5*b^8*c^3*d^2*g^6 - 10*a^6*b^7*c^2*
d^3*g^6 + 5*a^7*b^6*c*d^4*g^6 - a^8*b^5*d^5*g^6)*x^2 + 5*(a^4*b^9*c^5*g^6 -
 5*a^5*b^8*c^4*d*g^6 + 10*a^6*b^7*c^3*d^2*g^6 - 10*a^7*b^6*c^2*d^3*g^6 + 5*
a^8*b^5*c*d^4*g^6 - a^9*b^4*d^5*g^6)*x))*B^2*c*d^2*i^3 - 1/36000*(60*((77*a
^3*b^4*c^4 - 548*a^4*b^3*c^3*d + 352*a^5*b^2*c^2*d^2 - 148*a^6*b*c*d^3 + 27
*a^7*d^4 - 60*(10*b^7*c^3*d - 10*a*b^6*c^2*d^2 + 5*a^2*b^5*c*d^3 - a^3*b^4*
d^4)*x^4 + 30*(10*b^7*c^4 - 100*a*b^6*c^3*d + 95*a^2*b^5*c^2*d^2 - 46*a^3*b
^4*c*d^3 + 9*a^4*b^3*d^4)*x^3 + 10*(50*a*b^6*c^4 - 410*a^2*b^5*c^3*d + 337*
a^3*b^4*c^2*d^2 - 148*a^4*b^3*c*d^3 + 27*a^5*b^2*d^4)*x^2 + 5*(65*a^2*b^5*c
^4 - 488*a^3*b^4*c^3*d + 352*a^4*b^3*c^2*d^2 - 148*a^5*b^2*c*d^3 + 27*a^6*b
*d^4)*x)/((b^13*c^4 - 4*a*b^12*c^3*d + 6*a^2*b^11*c^2*d^2 - 4*a^3*b^10*c*d^
3 + a^4*b^9*d^4)*g^6*x^5 + 5*(a*b^12*c^4 - 4*a^2*b^11*c^3*d + 6*a^3*b^10*c^
2*d^2 - 4*a^4*b^9*c*d^3 + a^5*b^8*d^4)*g^6*x^4 + 10*(a^2*b^11*c^4 - 4*a^3*b
^10*c^3*d + 6*a^4*b^9*c^2*d^2 - 4*a^5*b^8*c*d^3 + a^6*b^7*d^4)*g^6*x^3 + 10
*(a^3*b^10*c^4 - 4*a^4*b^9*c^3*d + 6*a^5*b^8*c^2*d^2 - 4*a^6*b^7*c*d^3 + a^
7*b^6*d^4)*g^6*x^2 + 5*(a^4*b^9*c^4 - 4*a^5*b^8*c^3*d + 6*a^6*b^7*c^2*d^2 -
 4*a^7*b^6*c*d^3 + a^8*b^5*d^4)*g^6*x + (a^5*b^8*c^4 - 4*a^6*b^7*c^3*d + 6*
a^7*b^6*c^2*d^2 - 4*a^8*b^5*c*d^3 + a^9*b^4*d^4)*g^6) - 60*(10*b^3*c^3*d^2
- 10*a*b^2*c^2*d^3 + 5*a^2*b*c*d^4 - a^3*d^5)*log(b*x + a)/((b^9*c^5 - 5*a*
b^8*c^4*d + 10*a^2*b^7*c^3*d^2 - 10*a^3*b^6*c^2*d^3 + 5*a^4*b^5*c*d^4 - a^5
*b^4*d^5)*g^6) + 60*(10*b^3*c^3*d^2 - 10*a*b^2*c^2*d^3 + 5*a^2*b*c*d^4 - a^
3*d^5)*log(d*x + c)/((b^9*c^5 - 5*a*b^8*c^4*d + 10*a^2*b^7*c^3*d^2 - 10*a^3
*b^6*c^2*d^3 + 5*a^4*b^5*c*d^4 - a^5*b^4*d^5)*g^6))*log(b*e*x/(d*x + c) + a
*e/(d*x + c)) + (3799*a^3*b^5*c^5 - 51875*a^4*b^4*c^4*d + 63000*a^5*b^3*c^3
*d^2 - 19000*a^6*b^2*c^2*d^3 + 4625*a^7*b*c*d^4 - 549*a^8*d^5 - 60*(900*b^8
*c^4*d - 1400*a*b^7*c^3*d^2 + 675*a^2*b^6*c^2*d^3 - 202*a^3*b^5*c*d^4 + 27*
a^4*b^4*d^5)*x^4 + 30*(300*b^8*c^5 - 7700*a*b^7*c^4*d + 11175*a^2*b^6*c^3*d
^2 - 5017*a^3*b^5*c^2*d^3 + 1425*a^4*b^4*c*d^4 - 183*a^5*b^3*d^5)*x^3 + 10*
(1900*a*b^7*c^5 - 33950*a^2*b^6*c^4*d + 45999*a^3*b^5*c^3*d^2 - 18025*a^4*b
^4*c^2*d^3 + 4625*a^5*b^3*c*d^4 - 549*a^6*b^2*d^5)*x^2 + 1800*(10*a^5*b^3*c
^3*d^2 - 10*a^6*b^2*c^2*d^3 + 5*a^7*b*c*d^4 - a^8*d^5 + (10*b^8*c^3*d^2 - 1
0*a*b^7*c^2*d^3 + 5*a^2*b^6*c*d^4 - a^3*b^5*d^5)*x^5 + 5*(10*a*b^7*c^3*d^2
- 10*a^2*b^6*c^2*d^3 + 5*a^3*b^5*c*d^4 - a^4*b^4*d^5)*x^4 + 10*(10*a^2*b^6*
c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*x^3 + 10*(10*
a^3*b^5*c^3*d^2 - 10*a^4*b^4*c^2*d^3 + 5*a^5*b^3*c*d^4 - a^6*b^2*d^5)*x^2 +
 5*(10*a^4*b^4*c^3*d^2 - 10*a^5*b^3*c^2*d^3 + 5*a^6*b^2*c*d^4 - a^7*b*d^5)*
```

x)*log(b*x + a)^2 + 1800*(10*a^5*b^3*c^3*d^2 - 10*a^6*b^2*c^2*d^3 + 5*a^7*b *c*d^4 - a^8*d^5 + (10*b^8*c^3*d^2 - 10*a*b^7*c^2*d^3 + 5*a^2*b^6*c*d^4 - a ^3*b^5*d^5)*x^5 + 5*(10*a*b^7*c^3*d^2 - 10*a^2*b^6*c^2*d^3 + 5*a^3*b^5*c*d^ 4 - a^4*b^4*d^5)*x^4 + 10*(10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4* b^4*c*d^4 - a^5*b^3*d^5)*x^3 + 10*(10*a^3*b^5*c^3*d^2 - 10*a^4*b^4*c^2*d^3 + 5*a^5*b^3*c*d^4 - a^6*b^2*d^5)*x^2 + 5*(10*a^4*b^4*c^3*d^2 - 10*a^5*b^3*c ^2*d^3 + 5*a^6*b^2*c*d^4 - a^7*b*d^5)*x)*log(d*x + c)^2 + 5*(2875*a^2*b^6*c ^5 - 43451*a^3*b^5*c^4*d + 55500*a^4*b^4*c^3*d^2 - 19000*a^5*b^3*c^2*d^3 + 4625*a^6*b^2*c*d^4 - 549*a^7*b*d^5)*x - 60*(900*a^5*b^3*c^3*d^2 - 500*a^6*b ^2*c^2*d^3 + 175*a^7*b*c*d^4 - 27*a^8*d^5 + (900*b^8*c^3*d^2 - 500*a*b^7*c^ 2*d^3 + 175*a^2*b^6*c*d^4 - 27*a^3*b^5*d^5)*x^5 + 5*(900*a*b^7*c^3*d^2 - 50 0*a^2*b^6*c^2*d^3 + 175*a^3*b^5*c*d^4 - 27*a^4*b^4*d^5)*x^4 + 10*(900*a^2*b ^6*c^3*d^2 - 500*a^3*b^5*c^2*d^3 + 175*a^4*b^4*c*d^4 - 27*a^5*b^3*d^5)*x^3 + 10*(900*a^3*b^5*c^3*d^2 - 500*a^4*b^4*c^2*d^3 + 175*a^5*b^3*c*d^4 - 27*a^ 6*b^2*d^5)*x^2 + 5*(900*a^4*b^4*c^3*d^2 - 500*a^5*b^3*c^2*d^3 + 175*a^6*b^2 *c*d^4 - 27*a^7*b*d^5)*x)*log(b*x + a) + 60*(900*a^5*b^3*c^3*d^2 - 500*a^6* b^2*c^2*d^3 + 175*a^7*b*c*d^4 - 27*a^8*d^5 + (900*b^8*c^3*d^2 - 500*a*b^7*c ^2*d^3 + 175*a^2*b^6*c*d^4 - 27*a^3*b^5*d^5)*x^5 + 5*(900*a*b^7*c^3*d^2 - 5 00*a^2*b^6*c^2*d^3 + 175*a^3*b^5*c*d^4 - 27*a^4*b^4*d^5)*x^4 + 10*(900*a^2* b^6*c^3*d^2 - 500*a^3*b^5*c^2*d^3 + 175*a^4*b^4*c*d^4 - 27*a^5*b^3*d^5)*x^3 + 10*(900*a^3*b^5*c^3*d^2 - 500*a^4*b^4*c^2*d^3 + 175*a^5*b^3*c*d^4 - 27*a ^6*b^2*d^5)*x^2 + 5*(900*a^4*b^4*c^3*d^2 - 500*a^5*b^3*c^2*d^3 + 175*a^6*b^ 2*c*d^4 - 27*a^7*b*d^5)*x - 60*(10*a^5*b^3*c^3*d^2 - 10*a^6*b^2*c^2*d^3 + 5 *a^7*b*c*d^4 - a^8*d^5 + (10*b^8*c^3*d^2 - 10*a*b^7*c^2*d^3 + 5*a^2*b^6*c*d ^4 - a^3*b^5*d^5)*x^5 + 5*(10*a*b^7*c^3*d^2 - 10*a^2*b^6*c^2*d^3 + 5*a^3*b^ 5*c*d^4 - a^4*b^4*d^5)*x^4 + 10*(10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*x^3 + 10*(10*a^3*b^5*c^3*d^2 - 10*a^4*b^4*c^ 2*d^3 + 5*a^5*b^3*c*d^4 - a^6*b^2*d^5)*x^2 + 5*(10*a^4*b^4*c^3*d^2 - 10*a^5 *b^3*c^2*d^3 + 5*a^6*b^2*c*d^4 - a^7*b*d^5)*x)*log(b*x + a))*log(d*x + c))/ (a^5*b^9*c^5*g^6 - 5*a^6*b^8*c^4*d*g^6 + 10*a^7*b^7*c^3*d^2*g^6 - 10*a^8*b^ 6*c^2*d^3*g^6 + 5*a^9*b^5*c*d^4*g^6 - a^10*b^4*d^5*g^6 + (b^14*c^5*g^6 - 5* a*b^13*c^4*d*g^6 + 10*a^2*b^12*c^3*d^2*g^6 - 10*a^3*b^11*c^2*d^3*g^6 + 5*a^ 4*b^10*c*d^4*g^6 - a^5*b^9*d^5*g^6)*x^5 + 5*(a*b^13*c^5*g^6 - 5*a^2*b^12*c^ 4*d*g^6 + 10*a^3*b^11*c^3*d^2*g^6 - 10*a^4*b^10*c^2*d^3*g^6 + 5*a^5*b^9*c*d ^4*g^6 - a^6*b^8*d^5*g^6)*x^4 + 10*(a^2*b^12*c^5*g^6 - 5*a^3*b^11*c^4*d*g^6 + 10*a^4*b^10*c^3*d^2*g^6 - 10*a^5*b^9*c^2*d^3*g^6 + 5*a^6*b^8*c*d^4*g^6 - a^7*b^7*d^5*g^6)*x^3 + 10*(a^3*b^11*c^5*g^6 - 5*a^4*b^10*c^4*d*g^6 + 10*a^ 5*b^9*c^3*d^2*g^6 - 10*a^6*b^8*c^2*d^3*g^6 + 5*a^7*b^7*c*d^4*g^6 - a^8*b^6* d^5*g^6)*x^2 + 5*(a^4*b^10*c^5*g^6 - 5*a^5*b^9*c^4*d*g^6 + 10*a^6*b^8*c^3*d ^2*g^6 - 10*a^7*b^7*c^2*d^3*g^6 + 5*a^8*b^6*c*d^4*g^6 - a^9*b^5*d^5*g^6)*x))*B^2*d^3*i^3 - 1/600*A*B*d^3*i^3*(60*(10*b^3*x^3 + 10*a*b^2*x^2 + 5*a^2*b* x + a^3)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^9*g^6*x^5 + 5*a*b^8*g^6*x^ 4 + 10*a^2*b^7*g^6*x^3 + 10*a^3*b^6*g^6*x^2 + 5*a^4*b^5*g^6*x + a^5*b^4*g^6) + (77*a^3*b^4*c^4 - 548*a^4*b^3*c^3*d + 352*a^5*b^2*c^2*d^2 - 148*a^6*b*c *d^3 + 27*a^7*d^4 - 60*(10*b^7*c^3*d - 10*a*b^6*c^2*d^2 + 5*a^2*b^5*c*d^3 - a^3*b^4*d^4)*x^4 + 30*(10*b^7*c^4 - 100*a*b^6*c^3*d + 95*a^2*b^5*c^2*d^2 - 46*a^3*b^4*c*d^3 + 9*a^4*b^3*d^4)*x^3 + 10*(50*a*b^6*c^4 - 410*a^2*b^5*c^3 *d + 337*a^3*b^4*c^2*d^2 - 148*a^4*b^3*c*d^3 + 27*a^5*b^2*d^4)*x^2 + 5*(65* a^2*b^5*c^4 - 488*a^3*b^4*c^3*d + 352*a^4*b^3*c^2*d^2 - 148*a^5*b^2*c*d^3 + 27*a^6*b*d^4)*x)/((b^13*c^4 - 4*a*b^12*c^3*d + 6*a^2*b^11*c^2*d^2 - 4*a^3* b^10*c*d^3 + a^4*b^9*d^4)*g^6*x^5 + 5*(a*b^12*c^4 - 4*a^2*b^11*c^3*d + 6*a^ 3*b^10*c^2*d^2 - 4*a^4*b^9*c*d^3 + a^5*b^8*d^4)*g^6*x^4 + 10*(a^2*b^11*c^4 - 4*a^3*b^10*c^3*d + 6*a^4*b^9*c^2*d^2 - 4*a^5*b^8*c*d^3 + a^6*b^7*d^4)*g^6 *x^3 + 10*(a^3*b^10*c^4 - 4*a^4*b^9*c^3*d + 6*a^5*b^8*c^2*d^2 - 4*a^6*b^7*c *d^3 + a^7*b^6*d^4)*g^6*x^2 + 5*(a^4*b^9*c^4 - 4*a^5*b^8*c^3*d + 6*a^6*b^7* c^2*d^2 - 4*a^7*b^6*c*d^3 + a^8*b^5*d^4)*g^6*x + (a^5*b^8*c^4 - 4*a^6*b^7*c ^3*d + 6*a^7*b^6*c^2*d^2 - 4*a^8*b^5*c*d^3 + a^9*b^4*d^4)*g^6) - 60*(10*b^3 *c^3*d^2 - 10*a*b^2*c^2*d^3 + 5*a^2*b*c*d^4 - a^3*d^5)*log(b*x + a)/((b^9*c ^5 - 5*a*b^8*c^4*d + 10*a^2*b^7*c^3*d^2 - 10*a^3*b^6*c^2*d^3 + 5*a^4*b^5*c*

```
d^4 - a^5*b^4*d^5)*g^6) + 60*(10*b^3*c^3*d^2 - 10*a*b^2*c^2*d^3 + 5*a^2*b*c
*d^4 - a^3*d^5)*log(d*x + c)/((b^9*c^5 - 5*a*b^8*c^4*d + 10*a^2*b^7*c^3*d^2
 - 10*a^3*b^6*c^2*d^3 + 5*a^4*b^5*c*d^4 - a^5*b^4*d^5)*g^6)) - 1/300*A*B*c*
d^2*i^3*(60*(10*b^2*x^2 + 5*a*b*x + a^2)*log(b*e*x/(d*x + c) + a*e/(d*x + c
))/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2
 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) + (47*a^2*b^4*c^4 - 278*a^3*b^3*c^3*d + 8
22*a^4*b^2*c^2*d^2 - 278*a^5*b*c*d^3 + 47*a^6*d^4 + 60*(10*b^6*c^2*d^2 - 5*
a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 - 30*(10*b^6*c^3*d - 95*a*b^5*c^2*d^2 + 46*a
^2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^3 + 10*(20*b^6*c^4 - 140*a*b^5*c^3*d + 537*
a^2*b^4*c^2*d^2 - 248*a^3*b^3*c*d^3 + 47*a^4*b^2*d^4)*x^2 + 5*(35*a*b^5*c^4
 - 218*a^2*b^4*c^3*d + 702*a^3*b^3*c^2*d^2 - 278*a^4*b^2*c*d^3 + 47*a^5*b*d
^4)*x)/((b^12*c^4 - 4*a*b^11*c^3*d + 6*a^2*b^10*c^2*d^2 - 4*a^3*b^9*c*d^3 +
 a^4*b^8*d^4)*g^6*x^5 + 5*(a*b^11*c^4 - 4*a^2*b^10*c^3*d + 6*a^3*b^9*c^2*d^
2 - 4*a^4*b^8*c*d^3 + a^5*b^7*d^4)*g^6*x^4 + 10*(a^2*b^10*c^4 - 4*a^3*b^9*c
^3*d + 6*a^4*b^8*c^2*d^2 - 4*a^5*b^7*c*d^3 + a^6*b^6*d^4)*g^6*x^3 + 10*(a^3
*b^9*c^4 - 4*a^4*b^8*c^3*d + 6*a^5*b^7*c^2*d^2 - 4*a^6*b^6*c*d^3 + a^7*b^5*
d^4)*g^6*x^2 + 5*(a^4*b^8*c^4 - 4*a^5*b^7*c^3*d + 6*a^6*b^6*c^2*d^2 - 4*a^7
*b^5*c*d^3 + a^8*b^4*d^4)*g^6*x + (a^5*b^7*c^4 - 4*a^6*b^6*c^3*d + 6*a^7*b^
5*c^2*d^2 - 4*a^8*b^4*c*d^3 + a^9*b^3*d^4)*g^6) + 60*(10*b^2*c^2*d^3 - 5*a*
b*c*d^4 + a^2*d^5)*log(b*x + a)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*
d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6) - 60*(10*b^2
*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(d*x + c)/((b^8*c^5 - 5*a*b^7*c^4*d +
10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^
6)) - 1/200*A*B*c^2*d*i^3*(60*(5*b*x + a)*log(b*e*x/(d*x + c) + a*e/(d*x +
c))/(b^7*g^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^
2 + 5*a^4*b^3*g^6*x + a^5*b^2*g^6) + (27*a*b^4*c^4 - 148*a^2*b^3*c^3*d + 35
2*a^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d^4 - 60*(5*b^5*c*d^3 - a*b^4*
d^4)*x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^2*b^3*d^4)*x^3 - 10*(10
*b^5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*d^3 - 47*a^3*b^2*d^4)*x^2 + 5
*(15*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^2*d^2 - 428*a^3*b^2*c*d^3 + 7
7*a^4*b*d^4)*x)/((b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2*b^9*c^2*d^2 - 4*a^3*b^8
*c*d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a^2*b^9*c^3*d + 6*a^3*b^8
*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*x^4 + 10*(a^2*b^9*c^4 - 4*a^3
*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a^6*b^5*d^4)*g^6*x^3 + 1
0*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 - 4*a^6*b^5*c*d^3 + a^
7*b^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d + 6*a^6*b^5*c^2*d^2 -
 4*a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4 - 4*a^6*b^5*c^3*d + 6*
a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6) - 60*(5*b*c*d^4 - a*d
^5)*log(b*x + a)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^
4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4 - a*d^5)*lo
g(d*x + c)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*
d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6)) - 1/150*A*B*c^3*i^3*((60*b^4*d^4
*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2*b^2*c^2*d^2 - 163*a^3*b*c*d^3
+ 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 - 13*a
*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*c^3*d - 17*a*b^3*c^2*d^2 + 43*a
^2*b^2*c*d^3 - 77*a^3*b*d^4)*x)/((b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*
d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b^9*c^4 - 4*a^2*b^8*c^3
*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*g^6*x^4 + 10*(a^2*b
^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6*b^4*d^
4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d^2 - 4*a^6*
b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6
*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*g^6*x + (a^5*b^5*c^4 - 4*a^6*
b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*d^4)*g^6) + 60*log(
b*e*x/(d*x + c) + a*e/(d*x + c))/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^
4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6) + 60*d^5*log(
b*x + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^
3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) - 60*d^5*log(d*x + c)/((b^6*c^5 - 5*a
*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^
5*b*d^5)*g^6)) - 1/5*B^2*c^3*i^3*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(b^
```

```
6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a
^4*b^2*g^6*x + a^5*b*g^6) - 3/20*(5*b*x + a)*A^2*c^2*d*i^3/(b^7*g^6*x^5 + 5
*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x
+ a^5*b^2*g^6) - 1/10*(10*b^2*x^2 + 5*a*b*x + a^2)*A^2*c*d^2*i^3/(b^8*g^6*x
^5 + 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*
g^6*x + a^5*b^3*g^6) - 1/20*(10*b^3*x^3 + 10*a*b^2*x^2 + 5*a^2*b*x + a^3)*A
^2*d^3*i^3/(b^9*g^6*x^5 + 5*a*b^8*g^6*x^4 + 10*a^2*b^7*g^6*x^3 + 10*a^3*b^6
*g^6*x^2 + 5*a^4*b^5*g^6*x + a^5*b^4*g^6) - 1/5*A^2*c^3*i^3/(b^6*g^6*x^5 +
5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x
 + a^5*b*g^6)
```

mupad [B] time = 12.64, size = 3720, normalized size = 12.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
6,x)
```

```
[Out] - log((e*(a + b*x))/(c + d*x))^2*((x*(a*(b*((B^2*a*d^3*i^3)/(20*b^5*g^6) +
(B^2*c*d^2*i^3)/(10*b^4*g^6)) + (3*B^2*a*d^3*i^3)/(20*b^4*g^6) + (3*B^2*c*d
^2*i^3)/(10*b^3*g^6)) + b*(a*((B^2*a*d^3*i^3)/(20*b^5*g^6) + (B^2*c*d^2*i^3
)/(10*b^4*g^6)) + (3*B^2*c^2*d*i^3)/(20*b^3*g^6)) + (3*B^2*c^2*d*i^3)/(5*b^
2*g^6)) + x^2*(b*(b*((B^2*a*d^3*i^3)/(20*b^5*g^6) + (B^2*c*d^2*i^3)/(10*b^4
*g^6)) + (3*B^2*a*d^3*i^3)/(20*b^4*g^6) + (3*B^2*c*d^2*i^3)/(10*b^3*g^6)) +
 (3*B^2*a*d^3*i^3)/(10*b^3*g^6) + (3*B^2*c*d^2*i^3)/(5*b^2*g^6)) + a*(a*((B
^2*a*d^3*i^3)/(20*b^5*g^6) + (B^2*c*d^2*i^3)/(10*b^4*g^6)) + (3*B^2*c^2*d*i
^3)/(20*b^3*g^6)) + (B^2*c^3*i^3)/(5*b^2*g^6) + (B^2*d^3*i^3*x^3)/(2*b^2*g^
6))/(5*a^4*x + a^5/b + b^4*x^5 + 10*a^3*b*x^2 + 5*a*b^3*x^4 + 10*a^2*b^2*x^
3) - (B^2*d^5*i^3)/(20*b^4*g^6*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - ((200*A^
2*a^4*d^4*i^3 - 800*A^2*b^4*c^4*i^3 + 61*B^2*a^4*d^4*i^3 - 64*B^2*b^4*c^4*i
^3 + 180*A*B*a^4*d^4*i^3 - 320*A*B*b^4*c^4*i^3 + 200*A^2*a*b^3*c^3*d*i^3 +
200*A^2*a^3*b*c*d^3*i^3 + 61*B^2*a*b^3*c^3*d*i^3 + 61*B^2*a^3*b*c*d^3*i^3 +
 200*A^2*a^2*b^2*c^2*d^2*i^3 + 61*B^2*a^2*b^2*c^2*d^2*i^3 + 180*A*B*a^2*b^2
*c^2*d^2*i^3 + 180*A*B*a*b^3*c^3*d*i^3 + 180*A*B*a^3*b*c*d^3*i^3)/(20*(a*d
- b*c)) + (x^4*(9*B^2*b^4*d^4*i^3 + 20*A*B*b^4*d^4*i^3))/(a*d - b*c) + (x^3
*(200*A^2*a*b^3*d^4*i^3 + 61*B^2*a*b^3*d^4*i^3 - 200*A^2*b^4*c*d^3*i^3 + 11
*B^2*b^4*c*d^3*i^3 + 180*A*B*a*b^3*d^4*i^3 - 20*A*B*b^4*c*d^3*i^3))/(2*(a*d
 - b*c)) + (x*(200*A^2*a^3*b*d^4*i^3 + 61*B^2*a^3*b*d^4*i^3 - 600*A^2*b^4*c
^3*d*i^3 - 39*B^2*b^4*c^3*d*i^3 + 200*A^2*a*b^3*c^2*d^2*i^3 + 200*A^2*a^2*b
^2*c*d^3*i^3 + 61*B^2*a*b^3*c^2*d^2*i^3 + 61*B^2*a^2*b^2*c*d^3*i^3 + 180*A*
B*a^3*b*d^4*i^3 - 220*A*B*b^4*c^3*d*i^3 + 180*A*B*a*b^3*c^2*d^2*i^3 + 180*A
*B*a^2*b^2*c*d^3*i^3))/(4*(a*d - b*c)) + (x^2*(200*A^2*a^2*b^2*d^4*i^3 + 61
*B^2*a^2*b^2*d^4*i^3 - 400*A^2*b^4*c^2*d^2*i^3 - 14*B^2*b^4*c^2*d^2*i^3 + 2
00*A^2*a*b^3*c*d^3*i^3 + 61*B^2*a*b^3*c*d^3*i^3 + 180*A*B*a^2*b^2*d^4*i^3 -
 120*A*B*b^4*c^2*d^2*i^3 + 180*A*B*a*b^3*c*d^3*i^3))/(2*(a*d - b*c)))/(200*
a^5*b^4*g^6 + 200*b^9*g^6*x^5 + 1000*a^4*b^5*g^6*x + 1000*a*b^8*g^6*x^4 + 2
000*a^3*b^6*g^6*x^2 + 2000*a^2*b^7*g^6*x^3) - (log((e*(a + b*x))/(c + d*x))
*(x^3*((A*B*d^2*i^3)/(b^2*g^6) + (B^2*d^5*i^3*((b^4*c^2 + 5*a^2*b^2*d^2 - 6
*a*b^3*c*d)/(5*d^3) + b*(b*(b*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(20*b*d^3)
 + (a*(a*d - b*c))/(5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(10*d^3)
+ (2*a*(a*d - b*c))/(5*d^2)) - a*((b^2*c - a*b*d)/(5*d^2) - (2*b*(a*d - b*c
))/(5*d^2)) + (3*(b^3*c^2 + 5*a^2*b*d^2 - 6*a*b^2*c*d))/(20*d^3)) - a*(b*((
b^2*c - a*b*d)/(5*d^2) - (2*b*(a*d - b*c))/(5*d^2)) + (b^3*c - a*b^2*d)/(5*
d^2))))/(10*b^4*g^6*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) + a*(a*((B*d*i^3*(6*A
*b*c - B*a*d + B*b*c))/(30*b^5*g^6) + (A*B*a*d^2*i^3)/(10*b^5*g^6)) + (B*i^
3*(6*A*b^2*c^2 - B*a^2*d^2 + B*b^2*c^2))/(20*b^5*g^6)) + x*(b*(a*((B*d*i^3*
(6*A*b*c - B*a*d + B*b*c))/(30*b^5*g^6) + (A*B*a*d^2*i^3)/(10*b^5*g^6)) + (
B*i^3*(6*A*b^2*c^2 - B*a^2*d^2 + B*b^2*c^2))/(20*b^5*g^6)) + a*(b*((B*d*i^3
*(6*A*b*c - B*a*d + B*b*c))/(30*b^5*g^6) + (A*B*a*d^2*i^3)/(10*b^5*g^6)) +
```

```
(B*d*i^3*(6*A*b*c - B*a*d + B*b*c))/(10*b^4*g^6) + (3*A*B*a*d^2*i^3)/(10*b^
4*g^6)) + (B*i^3*(6*A*b^2*c^2 - B*a^2*d^2 + B*b^2*c^2))/(5*b^4*g^6) + (B^2*
d^5*i^3*((10*a^4*d^4 + b^4*c^4 + 15*a^2*b^2*c^2*d^2 - 6*a*b^3*c^3*d - 20*a^
3*b*c*d^3)/(5*d^5) + b*(a*(a*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(20*b*d^3)
+ (a*(a*d - b*c))/(5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^2*c^2*d - 15*a
^2*b*c*d^2)/(30*b*d^4)) + (10*a^4*d^4 + b^4*c^4 + 15*a^2*b^2*c^2*d^2 - 6*a*
b^3*c^3*d - 20*a^3*b*c*d^3)/(20*b*d^5)) + a*(b*(a*((5*a^2*d^2 + b^2*c^2 - 6
*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 +
 6*a*b^2*c^2*d - 15*a^2*b*c*d^2)/(30*b*d^4)) + a*(b*((5*a^2*d^2 + b^2*c^2 -
 6*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (5*a^2*d^2 + b^2*c^2
- 6*a*b*c*d)/(10*d^3) + (2*a*(a*d - b*c))/(5*d^2)) + (10*a^3*d^3 - b^3*c^3
+ 6*a*b^2*c^2*d - 15*a^2*b*c*d^2)/(10*d^4))))/(10*b^4*g^6*(a^2*d^2 + b^2*c^
2 - 2*a*b*c*d))) + x^2*(b*(b*((B*d*i^3*(6*A*b*c - B*a*d + B*b*c))/(30*b^5*g
^6) + (A*B*a*d^2*i^3)/(10*b^5*g^6)) + (B*d*i^3*(6*A*b*c - B*a*d + B*b*c))/(
10*b^4*g^6) + (3*A*B*a*d^2*i^3)/(10*b^4*g^6)) + (B*d*i^3*(6*A*b*c - B*a*d +
 B*b*c))/(5*b^3*g^6) + (3*A*B*a*d^2*i^3)/(5*b^3*g^6) + (B^2*d^5*i^3*(a*(b*(
b*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)
) + (5*a^2*d^2 + b^2*c^2 - 6*a*b*c*d)/(10*d^3) + (2*a*(a*d - b*c))/(5*d^2))
 - a*((b^2*c - a*b*d)/(5*d^2) - (2*b*(a*d - b*c))/(5*d^2)) + (3*(b^3*c^2 +
5*a^2*b*d^2 - 6*a*b^2*c*d))/(20*d^3)) - (b^4*c^3 - 10*a^3*b*d^3 + 15*a^2*b^
2*c*d^2 - 6*a*b^3*c^2*d)/(5*d^4) + b*(b*(a*((5*a^2*d^2 + b^2*c^2 - 6*a*b*c*
d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b^
2*c^2*d - 15*a^2*b*c*d^2)/(30*b*d^4)) + a*(b*((5*a^2*d^2 + b^2*c^2 - 6*a*b*
c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (5*a^2*d^2 + b^2*c^2 - 6*a*b
*c*d)/(10*d^3) + (2*a*(a*d - b*c))/(5*d^2)) + (10*a^3*d^3 - b^3*c^3 + 6*a*b
^2*c^2*d - 15*a^2*b*c*d^2)/(10*d^4))))/(10*b^4*g^6*(a^2*d^2 + b^2*c^2 - 2*a
*b*c*d))) + (B*i^3*(4*A*b^3*c^3 - B*a^3*d^3 + B*b^3*c^3 - B*a*b^2*c^2*d + B
*a^2*b*c*d^2))/(10*b^5*d*g^6) + (B^2*d^5*i^3*(a*(a*(a*((5*a^2*d^2 + b^2*c^2
 - 6*a*b*c*d)/(20*b*d^3) + (a*(a*d - b*c))/(5*b*d^2)) + (10*a^3*d^3 - b^3*c
^3 + 6*a*b^2*c^2*d - 15*a^2*b*c*d^2)/(30*b*d^4)) + (10*a^4*d^4 + b^4*c^4 +
15*a^2*b^2*c^2*d^2 - 6*a*b^3*c^3*d - 20*a^3*b*c*d^3)/(20*b*d^5)) + (5*a^5*d
^5 - b^5*c^5 - 15*a^2*b^3*c^3*d^2 + 20*a^3*b^2*c^2*d^3 + 6*a*b^4*c^4*d - 15
*a^4*b*c*d^4)/(5*b*d^6)))/(10*b^4*g^6*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B
^2*d^5*i^3*x^4*(b*(b*((b^2*c - a*b*d)/(5*d^2) - (2*b*(a*d - b*c))/(5*d^2))
+ (b^3*c - a*b^2*d)/(5*d^2)) + (b^4*c - a*b^3*d)/(5*d^2)))/(10*b^4*g^6*(a^2
*d^2 + b^2*c^2 - 2*a*b*c*d))))/((5*a^4*x)/d + a^5/(b*d) + (b^4*x^5)/d + (10
*a^3*b*x^2)/d + (5*a*b^3*x^4)/d + (10*a^2*b^2*x^3)/d) - (B*d^5*i^3*atan(((2
*b*d*x - (200*b^6*c^2*g^6 - 200*a^2*b^4*d^2*g^6)/(200*b^4*g^6*(a*d - b*c)))
*1i)/(a*d - b*c))*(20*A + 9*B)*1i)/(100*b^4*g^6*(a*d - b*c)^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**6,x)
```

```
[Out] Timed out
```

3.83 $\int \frac{(ci+dix)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^7}\,dx$

Optimal. Leaf size=463

$$-\frac{b^2i^3(c+dx)^6\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{6g^7(a+bx)^6(bc-ad)^3}-\frac{b^2Bi^3(c+dx)^6\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{18g^7(a+bx)^6(bc-ad)^3}-\frac{d^2i^3(c+dx)^4\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right.}{4g^7(a+bx)^4(bc-ad)^3}$$

```
[Out] -1/32*B^2*d^2*i^3*(d*x+c)^4/(-a*d+b*c)^3/g^7/(b*x+a)^4+4/125*b*B^2*d*i^3*(d
*x+c)^5/(-a*d+b*c)^3/g^7/(b*x+a)^5-1/108*b^2*B^2*i^3*(d*x+c)^6/(-a*d+b*c)^3
/g^7/(b*x+a)^6-1/8*B*d^2*i^3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*
c)^3/g^7/(b*x+a)^4+4/25*b*B*d*i^3*(d*x+c)^5*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a
*d+b*c)^3/g^7/(b*x+a)^5-1/18*b^2*B*i^3*(d*x+c)^6*(A+B*ln(e*(b*x+a)/(d*x+c))
)/(-a*d+b*c)^3/g^7/(b*x+a)^6-1/4*d^2*i^3*(d*x+c)^4*(A+B*ln(e*(b*x+a)/(d*x+c
)))^2/(-a*d+b*c)^3/g^7/(b*x+a)^4+2/5*b*d*i^3*(d*x+c)^5*(A+B*ln(e*(b*x+a)/(d
*x+c)))^2/(-a*d+b*c)^3/g^7/(b*x+a)^5-1/6*b^2*i^3*(d*x+c)^6*(A+B*ln(e*(b*x+a
)/(d*x+c)))^2/(-a*d+b*c)^3/g^7/(b*x+a)^6
```

Rubi [C] time = 6.08, antiderivative size = 1152, normalized size of antiderivative = 2.49, number of steps used = 162, number of rules used = 11, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.262, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i^3\log^2(a+bx)d^6}{60b^4(bc-ad)^3g^7}+\frac{B^2i^3\log^2(c+dx)d^6}{60b^4(bc-ad)^3g^7}-\frac{37B^2i^3\log(a+bx)d^6}{1800b^4(bc-ad)^3g^7}-\frac{Bi^3\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)d^6}{30b^4(bc-ad)^3g^7}+\frac{37}{18}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b*g*x)^
7,x]
```

```
[Out] -(B^2*(b*c - a*d)^3*i^3)/(108*b^4*g^7*(a + b*x)^6) - (53*B^2*d*(b*c - a*d)^
2*i^3)/(2250*b^4*g^7*(a + b*x)^5) - (73*B^2*d^2*(b*c - a*d)*i^3)/(7200*b^4*
g^7*(a + b*x)^4) + (53*B^2*d^3*i^3)/(5400*b^4*g^7*(a + b*x)^3) - (23*B^2*d^
4*i^3)/(3600*b^4*(b*c - a*d)*g^7*(a + b*x)^2) - (37*B^2*d^5*i^3)/(1800*b^4*
(b*c - a*d)^2*g^7*(a + b*x)) - (37*B^2*d^6*i^3*Log[a + b*x])/(1800*b^4*(b*c
 - a*d)^3*g^7) + (B^2*d^6*i^3*Log[a + b*x]^2)/(60*b^4*(b*c - a*d)^3*g^7) -
(B*(b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(18*b^4*g^7*(a +
 b*x)^6) - (13*B*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/
(75*b^4*g^7*(a + b*x)^5) - (19*B*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(120*b^4*g^7*(a + b*x)^4) - (B*d^3*i^3*(A + B*Log[(e*(a + b
*x))/(c + d*x)]))/(90*b^4*g^7*(a + b*x)^3) + (B*d^4*i^3*(A + B*Log[(e*(a +
b*x))/(c + d*x)]))/(60*b^4*(b*c - a*d)*g^7*(a + b*x)^2) - (B*d^5*i^3*(A + B
*Log[(e*(a + b*x))/(c + d*x)]))/(30*b^4*(b*c - a*d)^2*g^7*(a + b*x)) - (B*d
^6*i^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(30*b^4*(b*c - a*
d)^3*g^7) - ((b*c - a*d)^3*i^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(6*b
^4*g^7*(a + b*x)^6) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[(e*(a + b*x))/(c +
d*x)])^2)/(5*b^4*g^7*(a + b*x)^5) - (3*d^2*(b*c - a*d)*i^3*(A + B*Log[(e*(a
 + b*x))/(c + d*x)])^2)/(4*b^4*g^7*(a + b*x)^4) - (d^3*i^3*(A + B*Log[(e*(a
 + b*x))/(c + d*x)])^2)/(3*b^4*g^7*(a + b*x)^3) + (37*B^2*d^6*i^3*Log[c + d
*x])/(1800*b^4*(b*c - a*d)^3*g^7) - (B^2*d^6*i^3*Log[-((d*(a + b*x))/(b*c -
 a*d))]*Log[c + d*x])/(30*b^4*(b*c - a*d)^3*g^7) + (B*d^6*i^3*(A + B*Log[(e
*(a + b*x))/(c + d*x)])*Log[c + d*x])/(30*b^4*(b*c - a*d)^3*g^7) + (B^2*d^6
*i^3*Log[c + d*x]^2)/(60*b^4*(b*c - a*d)^3*g^7) - (B^2*d^6*i^3*Log[a + b*x]
*Log[(b*(c + d*x))/(b*c - a*d)])/(30*b^4*(b*c - a*d)^3*g^7) - (B^2*d^6*i^3*
PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(30*b^4*(b*c - a*d)^3*g^7) - (B^2
*d^6*i^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(30*b^4*(b*c - a*d)^3*g^7)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(83c+83dx)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^7}\,dx = \int \left(\frac{571787(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{b^3g^7(a+bx)^7} + \frac{1715361d(bc-ad)^2}{b^3g^7(\cdots}\right.$$

$$= \frac{\left(571787d^3\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^4}dx}{b^3g^7} + \frac{\left(1715361d^2(bc-ad)\right)\int \frac{\left(A+B\log\cdots\right.}{(\cdots}}{b^3g^7}$$

$$= -\frac{571787(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{6b^4g^7(a+bx)^6} - \frac{1715361d(bc-ad)^2 \left(A\cdots\right.}{5b^4g^7(a\cdots}$$

$$= -\frac{571787(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{6b^4g^7(a+bx)^6} - \frac{1715361d(bc-ad)^2 \left(A\cdots\right.}{5b^4g^7(a\cdots}$$

$$= -\frac{571787(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{6b^4g^7(a+bx)^6} - \frac{1715361d(bc-ad)^2 \left(A\cdots\right.}{5b^4g^7(a\cdots}$$

$$= -\frac{571787(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{6b^4g^7(a+bx)^6} - \frac{1715361d(bc-ad)^2 \left(A\cdots\right.}{5b^4g^7(a\cdots}$$

$$= -\frac{571787B(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{18b^4g^7(a+bx)^6} - \frac{7433231Bd(bc-ad)^2 \cdots}{75b^4g^7(a\cdots}$$

$$= -\frac{571787B(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{18b^4g^7(a+bx)^6} - \frac{7433231Bd(bc-ad)^2 \cdots}{75b^4g^7(a\cdots}$$

$$= -\frac{571787B(bc-ad)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{18b^4g^7(a+bx)^6} - \frac{7433231Bd(bc-ad)^2 \cdots}{75b^4g^7(a\cdots}$$

$$= -\frac{571787B^2(bc-ad)^3}{108b^4g^7(a+bx)^6} - \frac{30304711B^2d(bc-ad)^2}{2250b^4g^7(a+bx)^5} - \frac{41740451B^2d^2(\cdots}{7200b^4g^7(a+\cdots}$$

$$= -\frac{571787B^2(bc-ad)^3}{108b^4g^7(a+bx)^6} - \frac{30304711B^2d(bc-ad)^2}{2250b^4g^7(a+bx)^5} - \frac{41740451B^2d^2(\cdots}{7200b^4g^7(a+\cdots}$$

$$= -\frac{571787B^2(bc-ad)^3}{108b^4g^7(a+bx)^6} - \frac{30304711B^2d(bc-ad)^2}{2250b^4g^7(a+bx)^5} - \frac{41740451B^2d^2(\cdots}{7200b^4g^7(a+\cdots}$$

$$= -\frac{571787B^2(bc-ad)^3}{108b^4g^7(a+bx)^6} - \frac{30304711B^2d(bc-ad)^2}{2250b^4g^7(a+bx)^5} - \frac{41740451B^2d^2(\cdots}{7200b^4g^7(a+\cdots}$$

Mathematica [C] time = 6.25, size = 2583, normalized size = 5.58

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(a*g + b
*g*x)^7,x]
```

```
[Out] (i^3*(8100*a^2*B^2*d^2*(b*c - a*d)^4 - 1000*B^2*(b*c - a*d)^6 + 3744*a*B^2*
d*(-(b*c) + a*d)^5 + 16200*a*b*B^2*d^2*(b*c - a*d)^4*x - 3744*b*B^2*d*(b*c
- a*d)^5*x + 8100*b^2*B^2*d^2*(b*c - a*d)^4*x^2 + 4680*a*B^2*d^2*(b*c - a*d
)^4*(a + b*x) + 1200*B^2*d*(b*c - a*d)^5*(a + b*x) + 10800*a^2*B^2*d^3*(-(b
*c) + a*d)^3*(a + b*x) + 4680*b*B^2*d^2*(b*c - a*d)^4*x*(a + b*x) + 21600*a
*b*B^2*d^3*(-(b*c) + a*d)^3*x*(a + b*x) - 10800*b^2*B^2*d^3*(b*c - a*d)^3*x
^2*(a + b*x) + 16200*a^2*B^2*d^4*(b*c - a*d)^2*(a + b*x)^2 - 13875*B^2*d^2*
(b*c - a*d)^4*(a + b*x)^2 + 20640*a*B^2*d^3*(-(b*c) + a*d)^3*(a + b*x)^2 +
32400*a*b*B^2*d^4*(b*c - a*d)^2*x*(a + b*x)^2 - 20640*b*B^2*d^3*(b*c - a*d)
^3*x*(a + b*x)^2 + 16200*b^2*B^2*d^4*(b*c - a*d)^2*x^2*(a + b*x)^2 + 63360*
a*B^2*d^4*(b*c - a*d)^2*(a + b*x)^3 + 32500*B^2*d^3*(b*c - a*d)^3*(a + b*x)
^3 + 32400*a^2*B^2*d^5*(-(b*c) + a*d)*(a + b*x)^3 + 63360*b*B^2*d^4*(b*c -
a*d)^2*x*(a + b*x)^3 + 64800*a*b*B^2*d^5*(-(b*c) + a*d)*x*(a + b*x)^3 - 324
00*b^2*B^2*d^5*(b*c - a*d)*x^2*(a + b*x)^3 - 129600*a*b*B^2*c*d^5*(a + b*x)
^4 + 129600*a^2*B^2*d^6*(a + b*x)^4 - 80250*B^2*d^4*(b*c - a*d)^2*(a + b*x)
^4 + 126720*a*B^2*d^5*(-(b*c) + a*d)*(a + b*x)^4 - 129600*b^2*B^2*c*d^5*x*(
a + b*x)^4 + 129600*a*b*B^2*d^6*x*(a + b*x)^4 - 126720*b*B^2*d^5*(b*c - a*d
)*x*(a + b*x)^4 + 126000*b*B^2*c*d^5*(a + b*x)^5 - 126000*a*B^2*d^6*(a + b*
x)^5 + 160500*B^2*d^5*(b*c - a*d)*(a + b*x)^5 - 32400*a^2*B^2*d^6*(a + b*x)
^4*Log[a + b*x] - 64800*a*b*B^2*d^6*x*(a + b*x)^4*Log[a + b*x] - 32400*b^2*
B^2*d^6*x^2*(a + b*x)^4*Log[a + b*x] - 256320*a*B^2*d^6*(a + b*x)^5*Log[a +
 b*x] - 256320*b*B^2*d^6*x*(a + b*x)^5*Log[a + b*x] + 286500*B^2*d^6*(a + b
*x)^6*Log[a + b*x] - 6000*B*(b*c - a*d)^6*(A + B*Log[(e*(a + b*x))/(c + d*x
)]) + 25920*a*B*d*(-(b*c) + a*d)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2
5920*b*B*d*(b*c - a*d)^5*x*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 32400*a*B
*d^2*(b*c - a*d)^4*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 7200*B*
d*(b*c - a*d)^5*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 32400*b*B*
d^2*(b*c - a*d)^4*x*(a + b*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 49500*
B*d^2*(b*c - a*d)^4*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4320
0*a*B*d^3*(-(b*c) + a*d)^3*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])
 - 43200*b*B*d^3*(b*c - a*d)^3*x*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c +
d*x)]) + 64800*a*B*d^4*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(
c + d*x)]) + 42000*B*d^3*(b*c - a*d)^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))
/(c + d*x)]) + 64800*b*B*d^4*(b*c - a*d)^2*x*(a + b*x)^3*(A + B*Log[(e*(a +
 b*x))/(c + d*x)]) - 63000*B*d^4*(b*c - a*d)^2*(a + b*x)^4*(A + B*Log[(e*(a
 + b*x))/(c + d*x)]) + 129600*a*B*d^5*(-(b*c) + a*d)*(a + b*x)^4*(A + B*Log
[(e*(a + b*x))/(c + d*x)]) - 129600*b*B*d^5*(b*c - a*d)*x*(a + b*x)^4*(A +
B*Log[(e*(a + b*x))/(c + d*x)]) + 126000*B*d^5*(b*c - a*d)*(a + b*x)^5*(A +
 B*Log[(e*(a + b*x))/(c + d*x)]) - 129600*a*B*d^6*(a + b*x)^5*Log[a + b*x]*
(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 129600*b*B*d^6*x*(a + b*x)^5*Log[a +
 b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 126000*B*d^6*(a + b*x)^6*Log[a
 + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 18000*(b*c - a*d)^6*(A + B*L
og[(e*(a + b*x))/(c + d*x)])^2 + 64800*d*(-(b*c) + a*d)^5*(a + b*x)*(A + B*
Log[(e*(a + b*x))/(c + d*x)])^2 - 81000*d^2*(b*c - a*d)^4*(a + b*x)^2*(A +
B*Log[(e*(a + b*x))/(c + d*x)])^2 + 36000*d^3*(-(b*c) + a*d)^3*(a + b*x)^3*
(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 32400*a^2*B^2*d^6*(a + b*x)^4*Log[
c + d*x] + 64800*a*b*B^2*d^6*x*(a + b*x)^4*Log[c + d*x] + 32400*b^2*B^2*d^6
*x^2*(a + b*x)^4*Log[c + d*x] + 256320*a*B^2*d^6*(a + b*x)^5*Log[c + d*x] +
 256320*b*B^2*d^6*x*(a + b*x)^5*Log[c + d*x] - 286500*B^2*d^6*(a + b*x)^6*L
og[c + d*x] + 129600*a*B*d^6*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c + d*x)
])*Log[c + d*x] + 129600*b*B*d^6*x*(a + b*x)^5*(A + B*Log[(e*(a + b*x))/(c
+ d*x)])*Log[c + d*x] - 126000*B*d^6*(a + b*x)^6*(A + B*Log[(e*(a + b*x))/(
c + d*x)])*Log[c + d*x] + 64800*a*B^2*d^6*(a + b*x)^5*(Log[a + b*x]*(Log[a
+ b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(
b*c) + a*d)]) + 64800*b*B^2*d^6*x*(a + b*x)^5*(Log[a + b*x]*(Log[a + b*x] -
 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a
*d)]) - 63000*B^2*d^6*(a + b*x)^6*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c
 + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 6480
0*a*B^2*d^6*(a + b*x)^5*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x
```

```
])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) - 64800*b*B^2*d^
6*x*(a + b*x)^5*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c
 + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 63000*B^2*d^6*(a + b*x
)^6*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*
PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(108000*b^4*(b*c - a*d)^3*g^7*(a +
 b*x)^6)
```

fricas [B] time = 0.88, size = 1610, normalized size = 3.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^7,x, alg
orithm="fricas")
```

```
[Out] -1/108000*(60*((60*A*B + 37*B^2)*b^6*c*d^5 - (60*A*B + 37*B^2)*a*b^5*d^6)*i
^3*x^5 - 30*((60*A*B - 23*B^2)*b^6*c^2*d^4 - 36*(20*A*B + 9*B^2)*a*b^5*c*d^
5 + (660*A*B + 347*B^2)*a^2*b^4*d^6)*i^3*x^4 + 20*((1800*A^2 + 60*A*B - 53*
B^2)*b^6*c^3*d^3 - 27*(200*A^2 + 20*A*B - 11*B^2)*a*b^5*c^2*d^4 + 675*(8*A^
2 + 4*A*B + B^2)*a^2*b^4*c*d^5 - (1800*A^2 + 2220*A*B + 919*B^2)*a^3*b^3*d^
6)*i^3*x^3 + 15*((5400*A^2 + 1140*A*B + 73*B^2)*b^6*c^4*d^2 - 72*(200*A^2 +
 60*A*B + 7*B^2)*a*b^5*c^3*d^3 + 1350*(8*A^2 + 4*A*B + B^2)*a^2*b^4*c^2*d^4
 - (1800*A^2 + 2220*A*B + 919*B^2)*a^4*b^2*d^6)*i^3*x^2 + 6*(8*(1350*A^2 +
390*A*B + 53*B^2)*b^6*c^5*d - 45*(600*A^2 + 220*A*B + 39*B^2)*a*b^5*c^4*d^2
 + 2250*(8*A^2 + 4*A*B + B^2)*a^2*b^4*c^3*d^3 - (1800*A^2 + 2220*A*B + 919*
B^2)*a^5*b*d^6)*i^3*x + (1000*(18*A^2 + 6*A*B + B^2)*b^6*c^6 - 1728*(25*A^2
 + 10*A*B + 2*B^2)*a*b^5*c^5*d + 3375*(8*A^2 + 4*A*B + B^2)*a^2*b^4*c^4*d^2
 - (1800*A^2 + 2220*A*B + 919*B^2)*a^6*d^6)*i^3 + 1800*(B^2*b^6*d^6*i^3*x^6
 + 6*B^2*a*b^5*d^6*i^3*x^5 + 15*B^2*a^2*b^4*d^6*i^3*x^4 + 20*(B^2*b^6*c^3*d
^3 - 3*B^2*a*b^5*c^2*d^4 + 3*B^2*a^2*b^4*c*d^5)*i^3*x^3 + 15*(3*B^2*b^6*c^4
*d^2 - 8*B^2*a*b^5*c^3*d^3 + 6*B^2*a^2*b^4*c^2*d^4)*i^3*x^2 + 6*(6*B^2*b^6*
c^5*d - 15*B^2*a*b^5*c^4*d^2 + 10*B^2*a^2*b^4*c^3*d^3)*i^3*x + (10*B^2*b^6*
c^6 - 24*B^2*a*b^5*c^5*d + 15*B^2*a^2*b^4*c^4*d^2)*i^3)*log((b*e*x + a*e)/(
d*x + c))^2 + 60*((60*A*B + 37*B^2)*b^6*d^6*i^3*x^6 + 6*(10*B^2*b^6*c*d^5 +
 3*(20*A*B + 9*B^2)*a*b^5*d^6)*i^3*x^5 - 15*(2*B^2*b^6*c^2*d^4 - 24*B^2*a*b
^5*c*d^5 - 15*(4*A*B + B^2)*a^2*b^4*d^6)*i^3*x^4 + 20*((60*A*B + B^2)*b^6*c
^3*d^3 - 9*(20*A*B + B^2)*a*b^5*c^2*d^4 + 45*(4*A*B + B^2)*a^2*b^4*c*d^5)*i
^3*x^3 + 15*((180*A*B + 19*B^2)*b^6*c^4*d^2 - 24*(20*A*B + 3*B^2)*a*b^5*c^3
*d^3 + 90*(4*A*B + B^2)*a^2*b^4*c^2*d^4)*i^3*x^2 + 6*(4*(90*A*B + 13*B^2)*b
^6*c^5*d - 15*(60*A*B + 11*B^2)*a*b^5*c^4*d^2 + 150*(4*A*B + B^2)*a^2*b^4*c
^3*d^3)*i^3*x + (100*(6*A*B + B^2)*b^6*c^6 - 288*(5*A*B + B^2)*a*b^5*c^5*d
+ 225*(4*A*B + B^2)*a^2*b^4*c^4*d^2)*i^3)*log((b*e*x + a*e)/(d*x + c)))/((b
^13*c^3 - 3*a*b^12*c^2*d + 3*a^2*b^11*c*d^2 - a^3*b^10*d^3)*g^7*x^6 + 6*(a*
b^12*c^3 - 3*a^2*b^11*c^2*d + 3*a^3*b^10*c*d^2 - a^4*b^9*d^3)*g^7*x^5 + 15*
(a^2*b^11*c^3 - 3*a^3*b^10*c^2*d + 3*a^4*b^9*c*d^2 - a^5*b^8*d^3)*g^7*x^4 +
 20*(a^3*b^10*c^3 - 3*a^4*b^9*c^2*d + 3*a^5*b^8*c*d^2 - a^6*b^7*d^3)*g^7*x^
3 + 15*(a^4*b^9*c^3 - 3*a^5*b^8*c^2*d + 3*a^6*b^7*c*d^2 - a^7*b^6*d^3)*g^7*
x^2 + 6*(a^5*b^8*c^3 - 3*a^6*b^7*c^2*d + 3*a^7*b^6*c*d^2 - a^8*b^5*d^3)*g^7
*x + (a^6*b^7*c^3 - 3*a^7*b^6*c^2*d + 3*a^8*b^5*c*d^2 - a^9*b^4*d^3)*g^7)
```

giac [A] time = 3.69, size = 727, normalized size = 1.57

$$\left(18000\,B^2b^2ie^7\log\left(\frac{bxe+ae}{dx+c}\right)^2 - \frac{43200\,(bxe+ae)B^2bdie^6\log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c} + \frac{27000\,(bxe+ae)^2B^2d^2ie^5\log\left(\frac{bxe+ae}{dx+c}\right)^2}{(dx+c)^2} + 36000\,ABb^2ie^7\log\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^7,x, alg
orithm="giac")
```

```
[Out] 1/108000*(18000*B^2*b^2*i*e^7*log((b*x*e + a*e)/(d*x + c))^2 - 43200*(b*x*e
 + a*e)*B^2*b*d*i*e^6*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 27000*(b*x
*e + a*e)^2*B^2*d^2*i*e^5*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c)^2 + 3600
0*A*B*b^2*i*e^7*log((b*x*e + a*e)/(d*x + c)) + 6000*B^2*b^2*i*e^7*log((b*x*
e + a*e)/(d*x + c)) - 86400*(b*x*e + a*e)*A*B*b*d*i*e^6*log((b*x*e + a*e)/(
d*x + c))/(d*x + c) - 17280*(b*x*e + a*e)*B^2*b*d*i*e^6*log((b*x*e + a*e)/(
d*x + c))/(d*x + c) + 54000*(b*x*e + a*e)^2*A*B*d^2*i*e^5*log((b*x*e + a*e)
/(d*x + c))/(d*x + c)^2 + 13500*(b*x*e + a*e)^2*B^2*d^2*i*e^5*log((b*x*e +
a*e)/(d*x + c))/(d*x + c)^2 + 18000*A^2*b^2*i*e^7 + 6000*A*B*b^2*i*e^7 + 10
00*B^2*b^2*i*e^7 - 43200*(b*x*e + a*e)*A^2*b*d*i*e^6/(d*x + c) - 17280*(b*x
*e + a*e)*A*B*b*d*i*e^6/(d*x + c) - 3456*(b*x*e + a*e)*B^2*b*d*i*e^6/(d*x +
 c) + 27000*(b*x*e + a*e)^2*A^2*d^2*i*e^5/(d*x + c)^2 + 13500*(b*x*e + a*e)
^2*A*B*d^2*i*e^5/(d*x + c)^2 + 3375*(b*x*e + a*e)^2*B^2*d^2*i*e^5/(d*x + c)
^2)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))
/((b*x*e + a*e)^6*b^2*c^2*g^7/(d*x + c)^6 - 2*(b*x*e + a*e)^6*a*b*c*d*g^7/(
d*x + c)^6 + (b*x*e + a*e)^6*a^2*d^2*g^7/(d*x + c)^6)
```

maple [B] time = 0.06, size = 2762, normalized size = 5.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^7,x)
```

```
[Out] -4/5*d^2*e^5*i^3/(a*d-b*c)^4/g^7*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+4/5*d*e^5*i^3/(a*d-b*c)^4/g^7*A*B*b
^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)*c+1/3*d*e^6*i^3/(a*d-b*c)^4/g^7*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*d^2*e^4*i^3/(a*d-b*c)^4/g^7*
A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*b*c-1/6*e^6*i^3/(a*d-b*c)^4/g^7*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
+b/d*e)^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-4/125*d^2*e^5*i^3/(a*d-b*c)^4
/g^7*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a+1/8*d^3*e^4*i^3/(a*d
-b*c)^4/g^7*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*a-1/32*d^2*e^4*i^
3/(a*d-b*c)^4/g^7*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c-2/5*d^2
*e^5*i^3/(a*d-b*c)^4/g^7*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a+
2/5*d*e^5*i^3/(a*d-b*c)^4/g^7*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)^5*c+1/6*d*e^6*i^3/(a*d-b*c)^4/g^7*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)^6*a+1/4*d^3*e^4*i^3/(a*d-b*c)^4/g^7*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*
b*c/d*e+b/d*e)^4*a+1/32*d^3*e^4*i^3/(a*d-b*c)^4/g^7*B^2/(1/(d*x+c)*a*e-1/(d
*x+c)*b*c/d*e+b/d*e)^4*a-1/108*e^6*i^3/(a*d-b*c)^4/g^7*B^2*b^3/(1/(d*x+c)*a
*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*c-1/6*e^6*i^3/(a*d-b*c)^4/g^7*A^2*b^3/(1/(d*x
+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*c-1/18*e^6*i^3/(a*d-b*c)^4/g^7*A*B*b^3/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*c+4/125*d*e^5*i^3/(a*d-b*c)^4/g^7*
B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*c+1/108*d*e^6*i^3/(a*d-b*
c)^4/g^7*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*a+1/4*d^3*e^4*i^
3/(a*d-b*c)^4/g^7*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)^2*a+1/8*d^3*e^4*i^3/(a*d-b*c)^4/g^7*B^2/(1/(d*x+c)*a*e
-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/4*d^2*e^4*i
^3/(a*d-b*c)^4/g^7*A^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c-1/18*e
^6*i^3/(a*d-b*c)^4/g^7*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/5*d^2*e^5*i^3/(a*d-b*c)^4/g^7*B^2*b/(1/(d
*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/
2*d^3*e^4*i^3/(a*d-b*c)^4/g^7*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/18*d*e^6*i^3/(a*d-b*c)^4/g^7*A*B*b^2/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*a-1/3*e^6*i^3/(a*d-b*c)^4/g^7*A*B*
b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
```

```
e)*c+2/5*d*e^5*i^3/(a*d-b*c)^4/g^7*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-4/25*d^2*e^5*i^3/(a*d-b*c)^4/
g^7*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)*a+1/18*d*e^6*i^3/(a*d-b*c)^4/g^7*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*
b*c/d*e+b/d*e)^6*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-4/25*d^2*e^5*i^3/(a*d-b*
c)^4/g^7*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*a-1/8*d^2*e^4*i^3/
(a*d-b*c)^4/g^7*A*B/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*b*c+4/25*d*e^
5*i^3/(a*d-b*c)^4/g^7*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^5*c-1
/4*d^2*e^4*i^3/(a*d-b*c)^4/g^7*B^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^
4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*c-1/8*d^2*e^4*i^3/(a*d-b*c)^4/g^7*B^2
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^4*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
b*c+4/25*d*e^5*i^3/(a*d-b*c)^4/g^7*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
+b/d*e)^5*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/6*d*e^6*i^3/(a*d-b*c)^4/g^7*B
^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^6*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)^2*a
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^7,x, alg
orithm="maxima")
```

```
[Out] Timed out
```

mupad [B] time = 14.17, size = 6275, normalized size = 13.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(a*g + b*g*x)^
7,x)
```

```
[Out] ((1800*A^2*a^5*d^5*i^3 + 18000*A^2*b^5*c^5*i^3 + 919*B^2*a^5*d^5*i^3 + 1000
*B^2*b^5*c^5*i^3 + 2220*A*B*a^5*d^5*i^3 + 6000*A*B*b^5*c^5*i^3 - 25200*A^2*
a*b^4*c^4*d*i^3 + 1800*A^2*a^4*b*c*d^4*i^3 - 2456*B^2*a*b^4*c^4*d*i^3 + 919
*B^2*a^4*b*c*d^4*i^3 + 1800*A^2*a^2*b^3*c^3*d^2*i^3 + 1800*A^2*a^3*b^2*c^2*
d^3*i^3 + 919*B^2*a^2*b^3*c^3*d^2*i^3 + 919*B^2*a^3*b^2*c^2*d^3*i^3 + 2220*
A*B*a^2*b^3*c^3*d^2*i^3 + 2220*A*B*a^3*b^2*c^2*d^3*i^3 - 11280*A*B*a*b^4*c^
4*d*i^3 + 2220*A*B*a^4*b*c*d^4*i^3)/(60*(a*d - b*c)) + (x^4*(347*B^2*a*b^4*
d^5*i^3 + 23*B^2*b^5*c*d^4*i^3 + 660*A*B*a*b^4*d^5*i^3 - 60*A*B*b^5*c*d^4*i
^3))/(2*(a*d - b*c)) + (x^2*(1800*A^2*a^3*b^2*d^5*i^3 + 919*B^2*a^3*b^2*d^5
*i^3 + 5400*A^2*b^5*c^3*d^2*i^3 + 73*B^2*b^5*c^3*d^2*i^3 - 9000*A^2*a*b^4*c
^2*d^3*i^3 + 1800*A^2*a^2*b^3*c*d^4*i^3 - 431*B^2*a*b^4*c^2*d^3*i^3 + 919*B
^2*a^2*b^3*c*d^4*i^3 + 2220*A*B*a^3*b^2*d^5*i^3 + 1140*A*B*b^5*c^3*d^2*i^3
- 3180*A*B*a*b^4*c^2*d^3*i^3 + 2220*A*B*a^2*b^3*c*d^4*i^3))/(4*(a*d - b*c))
 + (x^3*(1800*A^2*a^2*b^3*d^5*i^3 + 919*B^2*a^2*b^3*d^5*i^3 + 1800*A^2*b^5*
c^2*d^3*i^3 - 53*B^2*b^5*c^2*d^3*i^3 - 3600*A^2*a*b^4*c*d^4*i^3 + 244*B^2*a
*b^4*c*d^4*i^3 + 2220*A*B*a^2*b^3*d^5*i^3 + 60*A*B*b^5*c^2*d^3*i^3 - 480*A*
B*a*b^4*c*d^4*i^3))/(3*(a*d - b*c)) + (x*(1800*A^2*a^4*b*d^5*i^3 + 919*B^2*
a^4*b*d^5*i^3 + 10800*A^2*b^5*c^4*d*i^3 + 424*B^2*b^5*c^4*d*i^3 - 16200*A^2
*a*b^4*c^3*d^2*i^3 + 1800*A^2*a^3*b^2*c*d^4*i^3 - 1331*B^2*a*b^4*c^3*d^2*i^
3 + 919*B^2*a^3*b^2*c*d^4*i^3 + 2220*A*B*a^4*b*d^5*i^3 + 3120*A*B*b^5*c^4*d
*i^3 + 1800*A^2*a^2*b^3*c^2*d^3*i^3 + 919*B^2*a^2*b^3*c^2*d^3*i^3 - 6780*A*
B*a*b^4*c^3*d^2*i^3 + 2220*A*B*a^3*b^2*c*d^4*i^3 + 2220*A*B*a^2*b^3*c^2*d^3
*i^3))/(10*(a*d - b*c)) + (d*x^5*(37*B^2*b^5*d^4*i^3 + 60*A*B*b^5*d^4*i^3))
/(a*d - b*c))/(x*(10800*a^5*b^6*c*g^7 - 10800*a^6*b^5*d*g^7) - x^5*(10800*a
^2*b^9*d*g^7 - 10800*a*b^10*c*g^7) + x^6*(1800*b^11*c*g^7 - 1800*a*b^10*d*g
^7) + x^2*(27000*a^4*b^7*c*g^7 - 27000*a^5*b^6*d*g^7) + x^4*(27000*a^2*b^9*
```

```
c*g^7 - 27000*a^3*b^8*d*g^7) + x^3*(36000*a^3*b^8*c*g^7 - 36000*a^4*b^7*d*g
^7) + 1800*a^6*b^5*c*g^7 - 1800*a^7*b^4*d*g^7) - log((e*(a + b*x))/(c + d*x
))^2*((x*(a*(b*((B^2*a*d^3*i^3)/(60*b^5*g^7) + (B^2*c*d^2*i^3)/(20*b^4*g^7)
) + (B^2*a*d^3*i^3)/(15*b^4*g^7) + (B^2*c*d^2*i^3)/(5*b^3*g^7)) + b*(a*((B^
2*a*d^3*i^3)/(60*b^5*g^7) + (B^2*c*d^2*i^3)/(20*b^4*g^7)) + (B^2*c^2*d*i^3)
/(10*b^3*g^7)) + (B^2*c^2*d*i^3)/(2*b^2*g^7)) + x^2*(b*(b*((B^2*a*d^3*i^3)/
(60*b^5*g^7) + (B^2*c*d^2*i^3)/(20*b^4*g^7)) + (B^2*a*d^3*i^3)/(15*b^4*g^7)
 + (B^2*c*d^2*i^3)/(5*b^3*g^7)) + (B^2*a*d^3*i^3)/(6*b^3*g^7) + (B^2*c*d^2*
i^3)/(2*b^2*g^7)) + a*(a*((B^2*a*d^3*i^3)/(60*b^5*g^7) + (B^2*c*d^2*i^3)/(2
0*b^4*g^7)) + (B^2*c^2*d*i^3)/(10*b^3*g^7)) + (B^2*c^3*i^3)/(6*b^2*g^7) + (
B^2*d^3*i^3*x^3)/(3*b^2*g^7))/(6*a^5*x + a^6/b + b^5*x^6 + 15*a^4*b*x^2 + 6
*a*b^4*x^5 + 20*a^3*b^2*x^3 + 15*a^2*b^3*x^4) - (B^2*d^6*i^3)/(60*b^4*g^7*(
a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) - (log((e*(a + b*x))/(
c + d*x))*(a*(a*((B*d*i^3*(9*A*b*c - B*a*d + B*b*c))/(90*b^5*g^7) + (A*B*a*
d^2*i^3)/(30*b^5*g^7)) + (B*i^3*(36*A*b^2*c^2 - 3*B*a^2*d^2 + 5*B*b^2*c^2 -
 2*B*a*b*c*d))/(180*b^5*g^7)) + x^2*(b*(b*((B*d*i^3*(9*A*b*c - B*a*d + B*b*
c))/(90*b^5*g^7) + (A*B*a*d^2*i^3)/(30*b^5*g^7)) + (2*B*d*i^3*(9*A*b*c - B*
a*d + B*b*c))/(45*b^4*g^7) + (2*A*B*a*d^2*i^3)/(15*b^4*g^7)) + (B*d*i^3*(9*
A*b*c - B*a*d + B*b*c))/(9*b^3*g^7) + (A*B*a*d^2*i^3)/(3*b^3*g^7) + (B^2*d^
6*i^3*(b*((20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2*d^2 - 7*a*b^3*c^3*d - 35*a
^3*b*c*d^3)/(15*d^5) + b*(a*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3
) + (a*(a*d - b*c))/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21
*a^2*b*c*d^2)/(60*b*d^4)) + (20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2*d^2 - 7*
a*b^3*c^3*d - 35*a^3*b*c*d^3)/(60*b*d^5)) + a*(b*(a*((6*a^2*d^2 + b^2*c^2 -
 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3
 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(60*b*d^4)) + a*(b*((6*a^2*d^2 + b^2*c^2
 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (6*a^2*d^2 + b^2*c^
2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c))/(3*d^2)) + (15*a^3*d^3 - b^3*c^3
+ 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(20*d^4))) + a*(a*(b*(b*((6*a^2*d^2 + b^2
*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (6*a^2*d^2 + b^
2*c^2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c))/(3*d^2)) - a*((b^2*c - a*b*d)
/(6*d^2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c^2 + 6*a^2*b*d^2 - 7*a*b^2*c*d)
/(10*d^3)) - (b^4*c^3 - 15*a^3*b*d^3 + 21*a^2*b^2*c*d^2 - 7*a*b^3*c^2*d)/(1
0*d^4) + b*(b*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d -
b*c))/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/
(60*b*d^4)) + a*(b*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d
- b*c))/(6*b*d^2)) + (6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d -
 b*c))/(3*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(
20*d^4))) + (b^5*c^4 + 20*a^4*b*d^4 - 35*a^3*b^2*c*d^3 + 21*a^2*b^3*c^2*d^2
 - 7*a*b^4*c^3*d)/(6*d^5)))/(30*b^4*g^7*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d
- 3*a^2*b*c*d^2))) + x*(b*(a*((B*d*i^3*(9*A*b*c - B*a*d + B*b*c))/(90*b^5*g
^7) + (A*B*a*d^2*i^3)/(30*b^5*g^7)) + (B*i^3*(36*A*b^2*c^2 - 3*B*a^2*d^2 +
5*B*b^2*c^2 - 2*B*a*b*c*d))/(180*b^5*g^7)) + a*(b*((B*d*i^3*(9*A*b*c - B*a*
d + B*b*c))/(90*b^5*g^7) + (A*B*a*d^2*i^3)/(30*b^5*g^7)) + (2*B*d*i^3*(9*A*
b*c - B*a*d + B*b*c))/(45*b^4*g^7) + (2*A*B*a*d^2*i^3)/(15*b^4*g^7)) + (B*i
^3*(36*A*b^2*c^2 - 3*B*a^2*d^2 + 5*B*b^2*c^2 - 2*B*a*b*c*d))/(36*b^4*g^7) +
 (B^2*d^6*i^3*(a*((20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2*d^2 - 7*a*b^3*c^3*
d - 35*a^3*b*c*d^3)/(15*d^5) + b*(a*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(
30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^
2*d - 21*a^2*b*c*d^2)/(60*b*d^4)) + (20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2*
d^2 - 7*a*b^3*c^3*d - 35*a^3*b*c*d^3)/(60*b*d^5)) + a*(b*(a*((6*a^2*d^2 + b
^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (15*a^3*d^3 -
 b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(60*b*d^4)) + a*(b*((6*a^2*d^2 +
 b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (6*a^2*d^2
+ b^2*c^2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c))/(3*d^2)) + (15*a^3*d^3 -
b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(20*d^4))) + (15*a^5*d^5 - b^5*c^
5 - 21*a^2*b^3*c^3*d^2 + 35*a^3*b^2*c^2*d^3 + 7*a*b^4*c^4*d - 35*a^4*b*c*d^
4)/(6*d^6) + b*(a*(a*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*
(a*d - b*c))/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*
```

```
c*d^2)/(60*b*d^4)) + (20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2*d^2 - 7*a*b^3*c
^3*d - 35*a^3*b*c*d^3)/(60*b*d^5)) + (15*a^5*d^5 - b^5*c^5 - 21*a^2*b^3*c^3
*d^2 + 35*a^3*b^2*c^2*d^3 + 7*a*b^4*c^4*d - 35*a^4*b*c*d^4)/(30*b*d^6))))/(
30*b^4*g^7*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) + x^3*((2*
A*B*d^2*i^3)/(3*b^2*g^7) + (B^2*d^6*i^3*(b*(a*(b*(b*((6*a^2*d^2 + b^2*c^2 -
 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (6*a^2*d^2 + b^2*c^2
- 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c))/(3*d^2)) - a*((b^2*c - a*b*d)/(6*d^
2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c^2 + 6*a^2*b*d^2 - 7*a*b^2*c*d)/(10*d
^3)) - (b^4*c^3 - 15*a^3*b*d^3 + 21*a^2*b^2*c*d^2 - 7*a*b^3*c^2*d)/(10*d^4)
 + b*(b*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/
(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(60*b*
d^4)) + a*(b*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c)
)/(6*b*d^2)) + (6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c))
/(3*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(20*d^4
))) - (b^5*c^3 - 15*a^3*b^2*d^3 + 21*a^2*b^3*c*d^2 - 7*a*b^4*c^2*d)/(6*d^4)
 + a*((2*(b^4*c^2 + 6*a^2*b^2*d^2 - 7*a*b^3*c*d))/(15*d^3) + b*(b*(b*((6*a^
2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))/(6*b*d^2)) + (6*a
^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(15*d^3) + (a*(a*d - b*c))/(3*d^2)) - a*((b^2
*c - a*b*d)/(6*d^2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c^2 + 6*a^2*b*d^2 - 7
*a*b^2*c*d)/(10*d^3)) - a*(b*((b^2*c - a*b*d)/(6*d^2) - (b*(a*d - b*c))/(3*
d^2)) + (b^3*c - a*b^2*d)/(6*d^2)))))/(30*b^4*g^7*(a^3*d^3 - b^3*c^3 + 3*a*
b^2*c^2*d - 3*a^2*b*c*d^2))) + (B*i^3*(60*A*b^3*c^3 - 6*B*a^3*d^3 + 11*B*b^
3*c^3 - 8*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2))/(180*b^5*d*g^7) + (B^2*d^6*i^3*
(a*(a*(a*(a*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (a*(a*d - b*c))
/(6*b*d^2)) + (15*a^3*d^3 - b^3*c^3 + 7*a*b^2*c^2*d - 21*a^2*b*c*d^2)/(60*b
*d^4)) + (20*a^4*d^4 + b^4*c^4 + 21*a^2*b^2*c^2*d^2 - 7*a*b^3*c^3*d - 35*a^
3*b*c*d^3)/(60*b*d^5)) + (15*a^5*d^5 - b^5*c^5 - 21*a^2*b^3*c^3*d^2 + 35*a^
3*b^2*c^2*d^3 + 7*a*b^4*c^4*d - 35*a^4*b*c*d^4)/(30*b*d^6)) + (6*a^6*d^6 +
b^6*c^6 + 21*a^2*b^4*c^4*d^2 - 35*a^3*b^3*c^3*d^3 + 35*a^4*b^2*c^2*d^4 - 7*
a*b^5*c^5*d - 21*a^5*b*c*d^5)/(6*b*d^7)))/(30*b^4*g^7*(a^3*d^3 - b^3*c^3 +
3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (B^2*d^6*i^3*x^5*((b^5*c - a*b^4*d)/(6*d^
2) + b*(b*(b*((b^2*c - a*b*d)/(6*d^2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c -
 a*b^2*d)/(6*d^2)) + (b^4*c - a*b^3*d)/(6*d^2))))/(30*b^4*g^7*(a^3*d^3 - b^
3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (B^2*d^6*i^3*x^4*((b^5*c^2 + 6*a^
2*b^3*d^2 - 7*a*b^4*c*d)/(6*d^3) + b*((2*(b^4*c^2 + 6*a^2*b^2*d^2 - 7*a*b^3
*c*d))/(15*d^3) + b*(b*(b*((6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(30*b*d^3) + (
a*(a*d - b*c))/(6*b*d^2)) + (6*a^2*d^2 + b^2*c^2 - 7*a*b*c*d)/(15*d^3) + (a
*(a*d - b*c))/(3*d^2)) - a*((b^2*c - a*b*d)/(6*d^2) - (b*(a*d - b*c))/(3*d^
2)) + (b^3*c^2 + 6*a^2*b*d^2 - 7*a*b^2*c*d)/(10*d^3)) - a*(b*((b^2*c - a*b*
d)/(6*d^2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c - a*b^2*d)/(6*d^2))) - a*(b*
(b*((b^2*c - a*b*d)/(6*d^2) - (b*(a*d - b*c))/(3*d^2)) + (b^3*c - a*b^2*d)/
(6*d^2)) + (b^4*c - a*b^3*d)/(6*d^2)))))/(30*b^4*g^7*(a^3*d^3 - b^3*c^3 + 3*
a*b^2*c^2*d - 3*a^2*b*c*d^2))))/((6*a^5*x)/d + a^6/(b*d) + (b^5*x^6)/d + (1
5*a^4*b*x^2)/d + (6*a*b^4*x^5)/d + (20*a^3*b^2*x^3)/d + (15*a^2*b^3*x^4)/d)
 - (B*d^6*i^3*atan((B*d^6*i^3*(60*A + 37*B)*(1800*b^7*c^3*g^7 + 1800*a^3*b^
4*d^3*g^7 - 1800*a*b^6*c^2*d*g^7 - 1800*a^2*b^5*c*d^2*g^7)*1i)/(1800*b^4*g^
7*(37*B^2*d^6*i^3 + 60*A*B*d^6*i^3)*(a*d - b*c)^3) + (B*d^7*i^3*x*(60*A + 3
7*B)*(b^6*c^2*g^7 + a^2*b^4*d^2*g^7 - 2*a*b^5*c*d*g^7)*2i)/(b^3*g^7*(37*B^2
*d^6*i^3 + 60*A*B*d^6*i^3)*(a*d - b*c)^3))*(60*A + 37*B)*1i)/(900*b^4*g^7*(
a*d - b*c)^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**7,x)
```

```
[Out] Timed out
```

3.84 $\int \frac{(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ci+dix}\,dx$

Optimal. Leaf size=718

$$\frac{b^3g^3(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{3d^4i}-\frac{3b^2g^3(c+dx)^2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2d^4i}-\frac{b^2Bg^3(c+dx)^2(bc-ad)}{3d^4}$$

```
[Out] 1/3*b*B^2*(-a*d+b*c)^2*g^3*x/d^3/i+1/3*B^2*(-a*d+b*c)^3*g^3*ln((b*x+a)/(d*x
+c))/d^4/i+7/3*B*(-a*d+b*c)^2*g^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^3/i
-1/3*b^2*B*(-a*d+b*c)*g^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^4/i+6*B*(
-a*d+b*c)^3*g^3*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^4/i+
3*(-a*d+b*c)^2*g^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^3/i-3/2*b^2*(-a*
d+b*c)*g^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^4/i+1/3*b^3*g^3*(d*x+c
)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^4/i+(-a*d+b*c)^3*g^3*ln((-a*d+b*c)/b/(d
*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^4/i-2*B^2*(-a*d+b*c)^3*g^3*ln(d*x+c)
/d^4/i-7/3*B*(-a*d+b*c)^3*g^3*(A+B*ln(e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/
(b*x+a))/d^4/i+6*B^2*(-a*d+b*c)^3*g^3*polylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i+
2*B*(-a*d+b*c)^3*g^3*(A+B*ln(e*(b*x+a)/(d*x+c)))*polylog(2,d*(b*x+a)/b/(d*x
+c))/d^4/i+7/3*B^2*(-a*d+b*c)^3*g^3*polylog(2,b*(d*x+c)/d/(b*x+a))/d^4/i-2*
B^2*(-a*d+b*c)^3*g^3*polylog(3,d*(b*x+a)/b/(d*x+c))/d^4/i
```

Rubi [B] time = 5.62, antiderivative size = 1828, normalized size of antiderivative = 2.55, number of steps used = 106, number of rules used = 28, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 43, 6688, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x),
x]
```

```
[Out] (5*A*b*B*(b*c - a*d)^2*g^3*x)/(3*d^3*i) + (b*B^2*(b*c - a*d)^2*g^3*x)/(3*d^
3*i) - (a*B^2*(b*c - a*d)^2*g^3*Log[a + b*x]^2)/(d^3*i) + (B^2*(b*c - a*d)^
3*g^3*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*
Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/(d^4*i) + (5*B^2*(
b*c - a*d)^2*g^3*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)])/(3*d^3*i) - (B*(b*
c - a*d)*g^3*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*d^2*i) +
(2*a*B*(b*c - a*d)^2*g^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))
/(d^3*i) + (b*(b*c - a*d)^2*g^3*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(
d^3*i) - ((b*c - a*d)*g^3*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^
2)/(2*d^2*i) + (g^3*(a + b*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(3*
d*i) - (2*B^2*(b*c - a*d)^3*g^3*Log[c + d*x])/(d^4*i) + (2*b*B^2*c*(b*c - a
*d)^2*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4*i) + (5*B^2*
(b*c - a*d)^3*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*d^4*i)
 - (2*b*B*c*(b*c - a*d)^2*g^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c +
d*x])/(d^4*i) - (5*B*(b*c - a*d)^3*g^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])
*Log[c + d*x])/(3*d^4*i) - (b*B^2*c*(b*c - a*d)^2*g^3*Log[c + d*x]^2)/(d^4*
i) - (5*B^2*(b*c - a*d)^3*g^3*Log[c + d*x]^2)/(6*d^4*i) + (2*a*B^2*(b*c - a
*d)^2*g^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^3*i) - (B^2*(b*c
- a*d)^3*g^3*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4*i) + (B^2*
(b*c - a*d)^3*g^3*Log[a + b*x]^2*Log[i*(c + d*x)])/(d^4*i) + (2*B^2*(b*c -
a*d)^3*g^3*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[i*(c + d*x)])/(d^4*i) - (A*
B*(b*c - a*d)^3*g^3*Log[i*(c + d*x)]^2)/(d^4*i) + (B^2*(b*c - a*d)^3*g^3*Lo
g[a + b*x]*Log[i*(c + d*x)]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*Log[-((d*(a
 + b*x))/(b*c - a*d))]*Log[i*(c + d*x)]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3
```

```
*Log[i*(c + d*x)]^3)/(3*d^4*i) + (2*A*B*(b*c - a*d)^3*g^3*Log[-((d*(a + b*x
))/(b*c - a*d))]*Log[c*i + d*i*x])/(d^4*i) - (2*B^2*(b*c - a*d)^3*g^3*Log[-
((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(
a + b*x))/(c + d*x)])*Log[c*i + d*i*x])/(d^4*i) - ((b*c - a*d)^3*g^3*(A + B
*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c*i + d*i*x])/(d^4*i) + (B^2*(b*c - a*
d)^3*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c*i + d*i*x]^2)/(d^4*i) - (B
^2*(b*c - a*d)^3*g^3*Log[(e*(a + b*x))/(c + d*x)]*Log[c*i + d*i*x]^2)/(d^4*
i) + (2*a*B^2*(b*c - a*d)^2*g^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(
d^3*i) - (2*B^2*(b*c - a*d)^3*g^3*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(
b*c - a*d))])/(d^4*i) + (2*b*B^2*c*(b*c - a*d)^2*g^3*PolyLog[2, (b*(c + d*x
))/(b*c - a*d)])/(d^4*i) + (2*A*B*(b*c - a*d)^3*g^3*PolyLog[2, (b*(c + d*x)
)/(b*c - a*d)])/(d^4*i) + (5*B^2*(b*c - a*d)^3*g^3*PolyLog[2, (b*(c + d*x))
/(b*c - a*d)])/(3*d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*Log[(c + d*x)^(-1)]*Pol
yLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i) - (2*B^2*(b*c - a*d)^3*g^3*(Log
[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2,
(b*(c + d*x))/(b*c - a*d)])/(d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*PolyLog[3, -
((d*(a + b*x))/(b*c - a*d))])/(d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*PolyLog[3,
 (b*(c + d*x))/(b*c - a*d)])/(d^4*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{84c+84dx}\,dx = \int\left(\frac{b(bc-ad)^2g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{84d^3} + \frac{(-bc+ad)^3g^3\left(A+B\log\right.}{d^3(84c+84dx)}\right.$$

$$= \frac{(bg)\int(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2dx}{84d} - \frac{\left(b(bc-ad)g^2\right)\int(ag+}{}$$

$$= \frac{b(bc-ad)^2g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{84d^3} - \frac{(bc-ad)g^3(a+bx)^2\left(A+B\,\mathrm{l}\right.}{168d^2}$$

$$= \frac{b(bc-ad)^2g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{84d^3} - \frac{(bc-ad)g^3(a+bx)^2\left(A+B\,\mathrm{l}\right.}{168d^2}$$

$$= \frac{b(bc-ad)^2g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{84d^3} - \frac{(bc-ad)g^3(a+bx)^2\left(A+B\,\mathrm{l}\right.}{168d^2}$$

$$= \frac{b(bc-ad)^2g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{84d^3} - \frac{(bc-ad)g^3(a+bx)^2\left(A+B\,\mathrm{l}\right.}{168d^2}$$

$$= \frac{5AbB(bc-ad)^2g^3x}{252d^3} - \frac{B(bc-ad)g^3(a+bx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{252d^2} + \cdots$$

$$= \frac{5AbB(bc-ad)^2g^3x}{252d^3} + \frac{5B^2(bc-ad)^2g^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{252d^3} - \frac{B(bc-}{}$$

$$= \frac{5AbB(bc-ad)^2g^3x}{252d^3} + \frac{5B^2(bc-ad)^2g^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{252d^3} - \frac{B(bc-}{}$$

$$= \frac{5AbB(bc-ad)^2g^3x}{252d^3} + \frac{bB^2(bc-ad)^2g^3x}{252d^3} + \frac{5B^2(bc-ad)^2g^3(a+bx)\,\mathrm{lo}}{252d^3}$$

$$= \frac{5AbB(bc-ad)^2g^3x}{252d^3} + \frac{bB^2(bc-ad)^2g^3x}{252d^3} + \frac{5B^2(bc-ad)^2g^3(a+bx)\,\mathrm{lo}}{252d^3}$$

$$= \frac{5AbB(bc-ad)^2g^3x}{252d^3} + \frac{bB^2(bc-ad)^2g^3x}{252d^3} - \frac{aB^2(bc-ad)^2g^3\log^2(a+b}{84d^3}$$

$$= \frac{5AbB(bc-ad)^2g^3x}{252d^3} + \frac{bB^2(bc-ad)^2g^3x}{252d^3} - \frac{aB^2(bc-ad)^2g^3\log^2(a+b}{84d^3}$$

$$= \frac{5AbB(bc-ad)^2g^3x}{252d^3} + \frac{bB^2(bc-ad)^2g^3x}{252d^3} - \frac{aB^2(bc-ad)^2g^3\log^2(a+b}{84d^3}$$

$$= \frac{5AbB(bc-ad)^2g^3x}{252d^3} + \frac{bB^2(bc-ad)^2g^3x}{252d^3} - \frac{aB^2(bc-ad)^2g^3\log^2(a+b}{84d^3}$$

$$= \frac{5AbB(bc-ad)^2g^3x}{252d^3} + \frac{bB^2(bc-ad)^2g^3x}{252d^3} - \frac{aB^2(bc-ad)^2g^3\log^2(a+b}{84d^3}$$

Mathematica [B] time = 1.90, size = 4802, normalized size = 6.69

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d
*i*x),x]
```

```
[Out] (g^3*(36*A*b^3*B*c^3 - 144*a*A*b^2*B*c^2*d - 66*a*b^2*B^2*c^2*d + 216*a^2*A
*b*B*c*d^2 + 162*a^2*b*B^2*c*d^2 - 108*a^3*A*B*d^3 - 108*a^3*B^2*d^3 + 18*A
^2*b^3*c^2*d*x + 30*A*b^3*B*c^2*d*x + 6*b^3*B^2*c^2*d*x - 54*a*A^2*b^2*c*d^
2*x - 72*a*A*b^2*B*c*d^2*x - 12*a*b^2*B^2*c*d^2*x + 54*a^2*A^2*b*d^3*x + 42
*a^2*A*b*B*d^3*x + 6*a^2*b*B^2*d^3*x - 9*A^2*b^3*c*d^2*x^2 - 6*A*b^3*B*c*d^
2*x^2 + 27*a*A^2*b^2*d^3*x^2 + 6*a*A*b^2*B*d^3*x^2 + 6*A^2*b^3*d^3*x^3 - 36
*b^3*B^2*c^3*Log[a/b + x] + 36*a*A*b^2*B*c^2*d*Log[a/b + x] + 174*a*b^2*B^2
*c^2*d*Log[a/b + x] - 108*a^2*A*b*B*c*d^2*Log[a/b + x] - 297*a^2*b*B^2*c*d^
2*Log[a/b + x] + 108*a^3*A*B*d^3*Log[a/b + x] + 167*a^3*B^2*d^3*Log[a/b + x
] - 18*a*b^2*B^2*c^2*d*Log[a/b + x]^2 + 63*a^2*b*B^2*c*d^2*Log[a/b + x]^2 -
 75*a^3*B^2*d^3*Log[a/b + x]^2 - 36*A*b^3*B*c^3*Log[c/d + x] - 49*b^3*B^2*c
^3*Log[c/d + x] + 108*a*A*b^2*B*c^2*d*Log[c/d + x] + 45*a*b^2*B^2*c^2*d*Log
[c/d + x] - 108*a^2*A*b*B*c*d^2*Log[c/d + x] + 108*a^2*b*B^2*c*d^2*Log[c/d
+ x] - 108*a^3*B^2*d^3*Log[c/d + x] + 36*b^3*B^2*c^3*Log[a/b + x]*Log[c/d +
 x] - 108*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[c/d + x] + 90*a^2*b*B^2*c*d^2*Lo
g[a/b + x]*Log[c/d + x] + 42*a^3*B^2*d^3*Log[a/b + x]*Log[c/d + x] + 18*A*b
^3*B*c^3*Log[c/d + x]^2 - 3*b^3*B^2*c^3*Log[c/d + x]^2 - 54*a*A*b^2*B*c^2*d
*Log[c/d + x]^2 + 27*a*b^2*B^2*c^2*d*Log[c/d + x]^2 + 54*a^2*A*b*B*c*d^2*Lo
g[c/d + x]^2 - 54*a^2*b*B^2*c*d^2*Log[c/d + x]^2 - 18*a^3*A*B*d^3*Log[c/d +
 x]^2 + 12*b^3*B^2*c^3*Log[c/d + x]^3 - 36*a*b^2*B^2*c^2*d*Log[c/d + x]^3 +
 36*a^2*b*B^2*c*d^2*Log[c/d + x]^3 + 18*a^2*A*b*B*c*d^2*Log[a + b*x] + 15*a
^2*b*B^2*c*d^2*Log[a + b*x] - 42*a^3*A*B*d^3*Log[a + b*x] - 23*a^3*B^2*d^3*
Log[a + b*x] - 18*a^2*b*B^2*c*d^2*Log[a/b + x]*Log[a + b*x] + 42*a^3*B^2*d^
3*Log[a/b + x]*Log[a + b*x] + 18*a^2*b*B^2*c*d^2*Log[c/d + x]*Log[a + b*x]
- 42*a^3*B^2*d^3*Log[c/d + x]*Log[a + b*x] - 18*b^3*B^2*c^3*Log[c/d + x]^2*
Log[(d*(a + b*x))/(-(b*c) + a*d)] + 54*a*b^2*B^2*c^2*d*Log[c/d + x]^2*Log[(
d*(a + b*x))/(-(b*c) + a*d)] - 54*a^2*b*B^2*c*d^2*Log[c/d + x]^2*Log[(d*(a
+ b*x))/(-(b*c) + a*d)] + 36*b^3*B^2*c^3*Log[(e*(a + b*x))/(c + d*x)] - 144
*a*b^2*B^2*c^2*d*Log[(e*(a + b*x))/(c + d*x)] + 216*a^2*b*B^2*c*d^2*Log[(e*
(a + b*x))/(c + d*x)] - 108*a^3*B^2*d^3*Log[(e*(a + b*x))/(c + d*x)] + 36*A
*b^3*B*c^2*d*x*Log[(e*(a + b*x))/(c + d*x)] + 30*b^3*B^2*c^2*d*x*Log[(e*(a
+ b*x))/(c + d*x)] - 108*a*A*b^2*B*c*d^2*x*Log[(e*(a + b*x))/(c + d*x)] - 7
2*a*b^2*B^2*c*d^2*x*Log[(e*(a + b*x))/(c + d*x)] + 108*a^2*A*b*B*d^3*x*Log[
(e*(a + b*x))/(c + d*x)] + 42*a^2*b*B^2*d^3*x*Log[(e*(a + b*x))/(c + d*x)]
- 18*A*b^3*B*c*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)] - 6*b^3*B^2*c*d^2*x^2*L
og[(e*(a + b*x))/(c + d*x)] + 54*a*A*b^2*B*d^3*x^2*Log[(e*(a + b*x))/(c + d
*x)] + 6*a*b^2*B^2*d^3*x^2*Log[(e*(a + b*x))/(c + d*x)] + 12*A*b^3*B*d^3*x^
3*Log[(e*(a + b*x))/(c + d*x)] + 36*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[(e*(a
+ b*x))/(c + d*x)] - 108*a^2*b*B^2*c*d^2*Log[a/b + x]*Log[(e*(a + b*x))/(c
+ d*x)] + 108*a^3*B^2*d^3*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)] - 36*b^
3*B^2*c^3*Log[c/d + x]*Log[(e*(a + b*x))/(c + d*x)] + 108*a*b^2*B^2*c^2*d*L
og[c/d + x]*Log[(e*(a + b*x))/(c + d*x)] - 108*a^2*b*B^2*c*d^2*Log[c/d + x]
*Log[(e*(a + b*x))/(c + d*x)] + 18*b^3*B^2*c^3*Log[c/d + x]^2*Log[(e*(a + b
*x))/(c + d*x)] - 54*a*b^2*B^2*c^2*d*Log[c/d + x]^2*Log[(e*(a + b*x))/(c +
d*x)] + 54*a^2*b*B^2*c*d^2*Log[c/d + x]^2*Log[(e*(a + b*x))/(c + d*x)] + 18
*a^2*b*B^2*c*d^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 42*a^3*B^2*d^3
*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 18*b^3*B^2*c^2*d*x*Log[(e*(a +
 b*x))/(c + d*x)]^2 - 54*a*b^2*B^2*c*d^2*x*Log[(e*(a + b*x))/(c + d*x)]^2 +
 54*a^2*b*B^2*d^3*x*Log[(e*(a + b*x))/(c + d*x)]^2 - 9*b^3*B^2*c*d^2*x^2*Lo
g[(e*(a + b*x))/(c + d*x)]^2 + 27*a*b^2*B^2*d^3*x^2*Log[(e*(a + b*x))/(c +
d*x)]^2 + 6*b^3*B^2*d^3*x^3*Log[(e*(a + b*x))/(c + d*x)]^2 - 18*A^2*b^3*c^3
```

*Log[c + d*x] - 30*A*b^3*B*c^3*Log[c + d*x] + 49*b^3*B^2*c^3*Log[c + d*x] + 54*a*A^2*b^2*c^2*d*Log[c + d*x] + 54*a*A*b^2*B*c^2*d*Log[c + d*x] - 111*a*b^2*B^2*c^2*d*Log[c + d*x] - 54*a^2*A^2*b*c*d^2*Log[c + d*x] + 66*a^2*b*B^2*c*d^2*Log[c + d*x] + 18*a^3*A^2*d^3*Log[c + d*x] + 36*A*b^3*B*c^3*Log[a/b + x]*Log[c + d*x] + 30*b^3*B^2*c^3*Log[a/b + x]*Log[c + d*x] - 108*a*A*b^2*B*c^2*d*Log[a/b + x]*Log[c + d*x] - 54*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[c + d*x] + 108*a^2*A*b*B*c*d^2*Log[a/b + x]*Log[c + d*x] - 36*a^3*A*B*d^3*Log[a/b + x]*Log[c + d*x] - 18*b^3*B^2*c^3*Log[a/b + x]^2*Log[c + d*x] + 54*a*b^2*B^2*c^2*d*Log[a/b + x]^2*Log[c + d*x] - 54*a^2*b*B^2*c*d^2*Log[a/b + x]^2*Log[c + d*x] - 36*A*b^3*B*c^3*Log[c/d + x]*Log[c + d*x] - 30*b^3*B^2*c^3*Log[c/d + x]*Log[c + d*x] + 108*a*A*b^2*B*c^2*d*Log[c/d + x]*Log[c + d*x] + 54*a*b^2*B^2*c^2*d*Log[c/d + x]*Log[c + d*x] - 108*a^2*A*b*B*c*d^2*Log[c/d + x]*Log[c + d*x] + 36*a^3*A*B*d^3*Log[c/d + x]*Log[c + d*x] + 36*b^3*B^2*c^3*Log[a/b + x]*Log[c/d + x]*Log[c + d*x] - 108*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[c/d + x]*Log[c + d*x] + 108*a^2*b*B^2*c*d^2*Log[a/b + x]*Log[c/d + x]*Log[c + d*x] - 18*b^3*B^2*c^3*Log[c/d + x]^2*Log[c + d*x] + 54*a*b^2*B^2*c^2*d*Log[c/d + x]^2*Log[c + d*x] - 54*a^2*b*B^2*c*d^2*Log[c/d + x]^2*Log[c + d*x] - 36*A*b^3*B*c^3*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 30*b^3*B^2*c^3*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 108*a*A*b^2*B*c^2*d*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 54*a*b^2*B^2*c^2*d*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 108*a^2*A*b*B*c*d^2*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 36*a^3*A*B*d^3*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 36*b^3*B^2*c^3*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 108*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 108*a^2*b*B^2*c*d^2*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 36*b^3*B^2*c^3*Log[c/d + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] + 108*a*b^2*B^2*c^2*d*Log[c/d + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 108*a^2*b*B^2*c*d^2*Log[c/d + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 18*b^3*B^2*c^3*Log[(e*(a + b*x))/(c + d*x)]^2*Log[c + d*x] + 54*a*b^2*B^2*c^2*d*Log[(e*(a + b*x))/(c + d*x)]^2*Log[c + d*x] - 54*a^2*b*B^2*c*d^2*Log[(e*(a + b*x))/(c + d*x)]^2*Log[c + d*x] - 36*A*b^3*B*c^3*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] - 66*b^3*B^2*c^3*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + 108*a*A*b^2*B*c^2*d*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + 198*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] - 108*a^2*A*b*B*c*d^2*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] - 198*a^2*b*B^2*c*d^2*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + 36*a^3*A*B*d^3*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + 66*a^3*B^2*d^3*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + 18*b^3*B^2*c^3*Log[a/b + x]^2*Log[(b*(c + d*x))/(b*c - a*d)] - 54*a*b^2*B^2*c^2*d*Log[a/b + x]^2*Log[(b*(c + d*x))/(b*c - a*d)] + 54*a^2*b*B^2*c*d^2*Log[a/b + x]^2*Log[(b*(c + d*x))/(b*c - a*d)] - 36*b^3*B^2*c^3*Log[a/b + x]*Log[c/d + x]*Log[(b*(c + d*x))/(b*c - a*d)] + 108*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[c/d + x]*Log[(b*(c + d*x))/(b*c - a*d)] - 108*a^2*b*B^2*c*d^2*Log[a/b + x]*Log[c/d + x]*Log[(b*(c + d*x))/(b*c - a*d)] - 36*b^3*B^2*c^3*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*(c + d*x))/(b*c - a*d)] + 108*a*b^2*B^2*c^2*d*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*(c + d*x))/(b*c - a*d)] - 108*a^2*b*B^2*c*d^2*Log[a/b + x]*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*(c + d*x))/(b*c - a*d)] - 18*a^3*B^2*d^3*Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - 6*B*((6*A + 11*B)*(b*c - a*d)^3 + 6*b*B*c*(b^2*c^2 - 3*a*b*c*d + 3*a^2*d^2)*Log[c/d + x] + 6*b*B*c*(b^2*c^2 - 3*a*b*c*d + 3*a^2*d^2)*Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] - 36*a^3*B^2*d^3*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 36*b^3*B^2*c^3*Log[c/d + x]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 108*a*b^2*B^2*c^2*d*Log[c/d + x]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 108*a^2*b*B^2*c*d^2*Log[c/d + x]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 36*b^3*B^2*c^3*PolyLog[3, (d*(a + b*x))/(-(b*c) + a*d)] - 108*a*b^2*B^2*c^2*d*PolyLog[3, (d*(a + b*x))/(-(b*c) + a*d)] + 108*a^2*b*B^2*c*d^2*PolyLog[3, (d*(a + b*x))/(-(b*c) + a*d)] + 36*a^3*B^2*d^3*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] + 36*b^3*B^2*c^3*PolyLog[3, (b*(c + d*x))/(b*c - a*d)] - 108*a*b^2*B^2*c^2*d*PolyLog[3,

```
(b*(c + d*x))/(b*c - a*d)] + 108*a^2*b*B^2*c*d^2*PolyLog[3, (b*(c + d*x))/(
b*c - a*d)]))/(18*d^4*i)
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2b^3g^3x^3 + 3\,A^2ab^2g^3x^2 + 3\,A^2a^2bg^3x + A^2a^3g^3 + \left(B^2b^3g^3x^3 + 3\,B^2ab^2g^3x^2 + 3\,B^2a^2bg^3x + B^2a^3g}{dix + ci}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algor
ithm="fricas")
```

```
[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a
^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a
^3*g^3)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^3*g^3*x^3 + 3*A*B*a*b^2*g
^3*x^2 + 3*A*B*a^2*b*g^3*x + A*B*a^3*g^3)*log((b*e*x + a*e)/(d*x + c)))/(d*
i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.28, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^3 \left(B\ln\left(\frac{(bx+a)e}{dx+c}\right) + A\right)^2}{dix + ci}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)
```

```
[Out] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$3\,A^2a^2bg^3\left(\frac{x}{di} - \frac{c\log\left(dx + c\right)}{d^2i}\right) - \frac{1}{6}\,A^2b^3g^3\left(\frac{6\,c^3\log\left(dx + c\right)}{d^4i} - \frac{2\,d^2x^3 - 3\,cdx^2 + 6\,c^2x}{d^3i}\right) + \frac{3}{2}\,A^2ab^2g^3\left(\frac{2\,c^2\log\left(\right.}{d^3i}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algor
ithm="maxima")
```

```
[Out] 3*A^2*a^2*b*g^3*(x/(d*i) - c*log(d*x + c)/(d^2*i)) - 1/6*A^2*b^3*g^3*(6*c^3
*log(d*x + c)/(d^4*i) - (2*d^2*x^3 - 3*c*d*x^2 + 6*c^2*x)/(d^3*i)) + 3/2*A^
2*a*b^2*g^3*(2*c^2*log(d*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A^2*a^
3*g^3*log(d*i*x + c*i)/(d*i) - 1/6*(2*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*
a^2*b*c*d^2*g^3 - a^3*d^3*g^3)*B^2*log(d*x + c)^3 - (2*B^2*b^3*d^3*g^3*x^3
- 3*(b^3*c*d^2*g^3 - 3*a*b^2*d^3*g^3)*B^2*x^2 + 6*(b^3*c^2*d*g^3 - 3*a*b^2*
c*d^2*g^3 + 3*a^2*b*d^3*g^3)*B^2*x)*log(d*x + c)^2)/(d^4*i) - integrate(-1/
3*(3*B^2*a^3*d^2*g^3*log(e)^2 + 6*A*B*a^3*d^2*g^3*log(e) + 3*(B^2*b^3*d^2*g
^3*log(e)^2 + 2*A*B*b^3*d^2*g^3*log(e))*x^3 + 9*(B^2*a*b^2*d^2*g^3*log(e)^2
```

```
 + 2*A*B*a*b^2*d^2*g^3*log(e))*x^2 + 3*(B^2*b^3*d^2*g^3*x^3 + 3*B^2*a*b^2*d
^2*g^3*x^2 + 3*B^2*a^2*b*d^2*g^3*x + B^2*a^3*d^2*g^3)*log(b*x + a)^2 + 9*(B
^2*a^2*b*d^2*g^3*log(e)^2 + 2*A*B*a^2*b*d^2*g^3*log(e))*x + 6*(B^2*a^3*d^2*
g^3*log(e) + A*B*a^3*d^2*g^3 + (B^2*b^3*d^2*g^3*log(e) + A*B*b^3*d^2*g^3)*x
^3 + 3*(B^2*a*b^2*d^2*g^3*log(e) + A*B*a*b^2*d^2*g^3)*x^2 + 3*(B^2*a^2*b*d^
2*g^3*log(e) + A*B*a^2*b*d^2*g^3)*x)*log(b*x + a) - (6*B^2*a^3*d^2*g^3*log(
e) + 6*A*B*a^3*d^2*g^3 + 2*(3*A*B*b^3*d^2*g^3 + (3*g^3*log(e) + g^3)*B^2*b^
3*d^2)*x^3 + 3*(6*A*B*a*b^2*d^2*g^3 - (b^3*c*d*g^3 - 3*(2*g^3*log(e) + g^3)
*a*b^2*d^2)*B^2)*x^2 + 6*(3*A*B*a^2*b*d^2*g^3 + (b^3*c^2*g^3 - 3*a*b^2*c*d*
g^3 + 3*(g^3*log(e) + g^3)*a^2*b*d^2)*B^2)*x + 6*(B^2*b^3*d^2*g^3*x^3 + 3*B
^2*a*b^2*d^2*g^3*x^2 + 3*B^2*a^2*b*d^2*g^3*x + B^2*a^3*d^2*g^3)*log(b*x + a
))*log(d*x + c))/(d^3*i*x + c*d^2*i), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)^3\,\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)^2}{c\,i+d\,i\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x),
x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x),
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

3.85 $\int \frac{(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ci+dix}\,dx$

Optimal. Leaf size=536

$$\frac{b^2g^2(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2d^3i}-\frac{2Bg^2(bc-ad)^2\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^3i}-\frac{g^2(bc-ad)^2\log\left(\frac{bc-}{b(c+}\right.}{}$$

```
[Out] -B*(-a*d+b*c)*g^2*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^2/i-4*B*(-a*d+b*c)^
2*g^2*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^3/i-2*(-a*d+b*
c)*g^2*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^2/i+1/2*b^2*g^2*(d*x+c)^2*(A
+B*ln(e*(b*x+a)/(d*x+c)))^2/d^3/i-(-a*d+b*c)^2*g^2*ln((-a*d+b*c)/b/(d*x+c))
*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^3/i+B^2*(-a*d+b*c)^2*g^2*ln(d*x+c)/d^3/i+B
*(-a*d+b*c)^2*g^2*(A+B*ln(e*(b*x+a)/(d*x+c)))*ln(1-b*(d*x+c)/d/(b*x+a))/d^3
/i-4*B^2*(-a*d+b*c)^2*g^2*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i-2*B*(-a*d+b*
c)^2*g^2*(A+B*ln(e*(b*x+a)/(d*x+c)))*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i-B
^2*(-a*d+b*c)^2*g^2*polylog(2,b*(d*x+c)/d/(b*x+a))/d^3/i+2*B^2*(-a*d+b*c)^2
*g^2*polylog(3,d*(b*x+a)/b/(d*x+c))/d^3/i
```

Rubi [B] time = 4.82, antiderivative size = 1666, normalized size of antiderivative = 3.11, number of steps used = 86, number of rules used = 27, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.643, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 6688, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x),
x]
```

```
[Out] -((A*b*B*(b*c - a*d)*g^2*x)/(d^2*i)) + (a*B^2*(b*c - a*d)*g^2*Log[a + b*x]^
2)/(d^2*i) - (B^2*(b*c - a*d)^2*g^2*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/(d^
3*i) + (B^2*(b*c - a*d)^2*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*
x)^(-1)]^2)/(d^3*i) - (B^2*(b*c - a*d)*g^2*(a + b*x)*Log[(e*(a + b*x))/(c +
 d*x)])/(d^2*i) - (2*a*B*(b*c - a*d)*g^2*Log[a + b*x]*(A + B*Log[(e*(a + b*
x))/(c + d*x)]))/(d^2*i) - (b*(b*c - a*d)*g^2*x*(A + B*Log[(e*(a + b*x))/(c
 + d*x)])^2)/(d^2*i) + (g^2*(a + b*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]
)^2)/(2*d*i) + (B^2*(b*c - a*d)^2*g^2*Log[c + d*x])/(d^3*i) - (2*b*B^2*c*(b
*c - a*d)*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^3*i) - (B^
2*(b*c - a*d)^2*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^3*i)
 + (2*b*B*c*(b*c - a*d)*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*
x])/(d^3*i) + (B*(b*c - a*d)^2*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log
[c + d*x])/(d^3*i) + (b*B^2*c*(b*c - a*d)*g^2*Log[c + d*x]^2)/(d^3*i) + (B^
2*(b*c - a*d)^2*g^2*Log[c + d*x]^2)/(2*d^3*i) - (2*a*B^2*(b*c - a*d)*g^2*Lo
g[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^2*i) + (B^2*(b*c - a*d)^2*g^2
*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^3*i) - (B^2*(b*c - a*d)^
2*g^2*Log[a + b*x]^2*Log[i*(c + d*x)])/(d^3*i) - (2*B^2*(b*c - a*d)^2*g^2*L
og[a + b*x]*Log[(c + d*x)^(-1)]*Log[i*(c + d*x)])/(d^3*i) + (A*B*(b*c - a*d
)^2*g^2*Log[i*(c + d*x)]^2)/(d^3*i) - (B^2*(b*c - a*d)^2*g^2*Log[a + b*x]*L
og[i*(c + d*x)]^2)/(d^3*i) + (B^2*(b*c - a*d)^2*g^2*Log[-((d*(a + b*x))/(b*
c - a*d))]*Log[i*(c + d*x)]^2)/(d^3*i) + (B^2*(b*c - a*d)^2*g^2*Log[i*(c +
d*x)]^3)/(3*d^3*i) - (2*A*B*(b*c - a*d)^2*g^2*Log[-((d*(a + b*x))/(b*c - a*
d))]*Log[c*i + d*i*x])/(d^3*i) + (2*B^2*(b*c - a*d)^2*g^2*Log[-((d*(a + b*x
))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c
 + d*x)])*Log[c*i + d*i*x])/(d^3*i) + ((b*c - a*d)^2*g^2*(A + B*Log[(e*(a +
 b*x))/(c + d*x)])^2*Log[c*i + d*i*x])/(d^3*i) - (B^2*(b*c - a*d)^2*g^2*Log
[-((d*(a + b*x))/(b*c - a*d))]*Log[c*i + d*i*x]^2)/(d^3*i) + (B^2*(b*c - a*
```

```
d)^2*g^2*Log[(e*(a + b*x))/(c + d*x)]*Log[c*i + d*i*x]^2)/(d^3*i) - (2*a*B^
2*(b*c - a*d)*g^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*i) + (2*B^
2*(b*c - a*d)^2*g^2*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/
(d^3*i) - (2*b*B^2*c*(b*c - a*d)*g^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])
/(d^3*i) - (2*A*B*(b*c - a*d)^2*g^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/
(d^3*i) - (B^2*(b*c - a*d)^2*g^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^
3*i) - (2*B^2*(b*c - a*d)^2*g^2*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c + d*x)
)/(b*c - a*d)])/(d^3*i) + (2*B^2*(b*c - a*d)^2*g^2*(Log[a + b*x] + Log[(c +
 d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c + d*x))/(b*c -
 a*d)])/(d^3*i) - (2*B^2*(b*c - a*d)^2*g^2*PolyLog[3, -((d*(a + b*x))/(b*c
- a*d))])/(d^3*i) - (2*B^2*(b*c - a*d)^2*g^2*PolyLog[3, (b*(c + d*x))/(b*c
- a*d)])/(d^3*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
```

```
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
```

```
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
```

```
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{85c+85dx}\,dx = \int\left(-\frac{b(bc-ad)g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{85d^2}+\frac{(bc-ad)^2g^2\left(A+B\log\left(\cdots\right)\right)}{d^2(85c+85dx)}\cdots\right.$$

$$=\frac{(bg)\int(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2dx}{85d}-\frac{\left(b(bc-ad)g^2\right)\int\left(A+\cdots\right)}{85d^2}\cdots$$

$$=-\frac{b(bc-ad)g^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{85d^2}+\frac{g^2(a+bx)^2\left(A+B\log\left(\frac{e(a+\cdots}{c+d\cdots}\right)\right)}{170d}\cdots$$

$$=-\frac{b(bc-ad)g^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{85d^2}+\frac{g^2(a+bx)^2\left(A+B\log\left(\frac{e(a+\cdots}{c+d\cdots}\right)\right)}{170d}\cdots$$

$$=-\frac{b(bc-ad)g^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{85d^2}+\frac{g^2(a+bx)^2\left(A+B\log\left(\frac{e(a+\cdots}{c+d\cdots}\right)\right)}{170d}\cdots$$

$$=-\frac{b(bc-ad)g^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{85d^2}+\frac{g^2(a+bx)^2\left(A+B\log\left(\frac{e(a+\cdots}{c+d\cdots}\right)\right)}{170d}\cdots$$

$$=-\frac{AbB(bc-ad)g^2x}{85d^2}-\frac{2aB(bc-ad)g^2\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\cdots\right)}{85d^2}\cdots$$

$$=-\frac{AbB(bc-ad)g^2x}{85d^2}-\frac{B^2(bc-ad)g^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{85d^2}-\frac{2aB(bc-\cdots}{\cdots}$$

$$=-\frac{AbB(bc-ad)g^2x}{85d^2}-\frac{B^2(bc-ad)g^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{85d^2}-\frac{2aB(bc-\cdots}{\cdots}$$

$$=-\frac{AbB(bc-ad)g^2x}{85d^2}-\frac{B^2(bc-ad)g^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{85d^2}-\frac{2aB(bc-\cdots}{\cdots}$$

$$=-\frac{AbB(bc-ad)g^2x}{85d^2}-\frac{B^2(bc-ad)g^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{85d^2}-\frac{2aB(bc-\cdots}{\cdots}$$

$$=-\frac{AbB(bc-ad)g^2x}{85d^2}+\frac{aB^2(bc-ad)g^2\log^2(a+bx)}{85d^2}-\frac{B^2(bc-ad)g^2(a\cdots}{85\cdots}$$

$$=-\frac{AbB(bc-ad)g^2x}{85d^2}+\frac{aB^2(bc-ad)g^2\log^2(a+bx)}{85d^2}-\frac{B^2(bc-ad)g^2(a\cdots}{85\cdots}$$

$$=-\frac{AbB(bc-ad)g^2x}{85d^2}+\frac{aB^2(bc-ad)g^2\log^2(a+bx)}{85d^2}-\frac{B^2(bc-ad)g^2(a\cdots}{85\cdots}$$

$$=-\frac{AbB(bc-ad)g^2x}{85d^2}+\frac{aB^2(bc-ad)g^2\log^2(a+bx)}{85d^2}-\frac{B^2(bc-ad)^2g^2\,\mathrm{lo}\cdots}{\cdots}$$

$$=-\frac{AbB(bc-ad)g^2x}{85d^2}+\frac{aB^2(bc-ad)g^2\log^2(a+bx)}{85d^2}-\frac{B^2(bc-ad)^2g^2\,\mathrm{lo}\cdots}{\cdots}$$

Mathematica [B] time = 1.73, size = 1514, normalized size = 2.82

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d
*i*x),x]
```

```
[Out] (g^2*(-2*A^2*b*d*(b*c - 2*a*d)*x + A^2*b^2*d^2*x^2 + 2*A^2*(b*c - a*d)^2*Lo
g[c + d*x] + 2*A*B*(-2*b^2*c^2 + 2*a*b*c*d - b^2*c*d*x + a*b*d^2*x + 2*b^2*
c^2*Log[c/d + x] - b^2*c^2*Log[c/d + x]^2 - a^2*d^2*Log[a + b*x] - 2*b^2*c*
d*x*Log[(e*(a + b*x))/(c + d*x)] + b^2*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)]
 + b^2*c^2*Log[c + d*x] + 2*b^2*c^2*Log[c/d + x]*Log[c + d*x] + 2*b^2*c^2*L
og[(e*(a + b*x))/(c + d*x)]*Log[c + d*x] - 2*b*c*Log[a/b + x]*(a*d + b*c*Lo
g[c + d*x] - b*c*Log[(b*(c + d*x))/(b*c - a*d)]) + 2*b^2*c^2*PolyLog[2, (d*
(a + b*x))/(-(b*c) + a*d)]) - 2*a^2*A*B*d^2*(Log[c/d + x]^2 + 2*(Log[a/b +
x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x] - 2*(Log[a/b
 + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c) + a
*d)])) - 4*a*A*B*d*(-2*d*(a + b*x)*(-1 + Log[a/b + x]) + 2*b*(c + d*x)*(-1
+ Log[c/d + x]) - b*c*Log[c/d + x]^2 + 2*b*(Log[a/b + x] - Log[c/d + x] - L
og[(e*(a + b*x))/(c + d*x)])*(d*x - c*Log[c + d*x]) + 2*b*c*(Log[a/b + x]*L
og[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))
+ 4*a*B^2*d*(d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]^2 + b*c*Log[(e*(a + b
*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - (b*c - a*d)*(Log[(b*c -
a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - 2*Log[(e*(a + b*
x))/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x
))/(b*c - a*d)]) + 2*b*c*(Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b
*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])) + B^2*(2*d*
(-(b*c) + a*d)*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)] - 2*a^2*d^2*Log[a + b
*x]*Log[(e*(a + b*x))/(c + d*x)] + b^2*d^2*x^2*Log[(e*(a + b*x))/(c + d*x)]
^2 - 2*b*c*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]^2 + 2*(b*c - a*d)^2*Log
[c + d*x] - 2*b^2*c^2*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b
*d*x)] - 2*b^2*c^2*Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*
d*x)] + a^2*d^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*
d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b^2*c^2*(Log[(b*c - a*
d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b
*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 2*b*c*(b*c - a*d
)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - 2*
Log[(e*(a + b*x))/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[
2, (b*(c + d*x))/(b*c - a*d)]) - 4*b^2*c^2*(Log[(e*(a + b*x))/(c + d*x)]*Po
lyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*
x))])) - 2*a^2*B^2*d^2*(Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c
 + b*d*x)] + 2*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c
+ d*x))] - 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])))/(2*d^3*i)
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{A^2b^2g^2x^2 + 2\,A^2abg^2x + A^2a^2g^2 + \left(B^2b^2g^2x^2 + 2\,B^2abg^2x + B^2a^2g^2\right)\log\left(\frac{bex+ae}{dx+c}\right)^2 + 2\left(ABb^2g^2x^2 + \right.}{dix + ci}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algor
ithm="fricas")
```

```
[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^
2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*
b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/
(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.96, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{2} \left(B \ln \left(\frac{(bx+a)e}{dx+c}\right)+A\right)^{2}}{dix+ci}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)
```

```
[Out] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,A^{2}abg^{2}\left(\frac{x}{di}-\frac{c\log\left(dx+c\right)}{d^{2}i}\right)+\frac{1}{2}\,A^{2}b^{2}g^{2}\left(\frac{2\,c^{2}\log\left(dx+c\right)}{d^{3}i}+\frac{dx^{2}-2\,cx}{d^{2}i}\right)+\frac{A^{2}a^{2}g^{2}\log\left(dix+ci\right)}{di}+\frac{2\left(b^{2}c^{2}g^{2}-2\,a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algor
ithm="maxima")
```

```
[Out] 2*A^2*a*b*g^2*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + 1/2*A^2*b^2*g^2*(2*c^2*l
og(d*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A^2*a^2*g^2*log(d*i*x + c*
i)/(d*i) + 1/6*(2*(b^2*c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)*B^2*log(d*x +
 c)^3 + 3*(B^2*b^2*d^2*g^2*x^2 - 2*(b^2*c*d*g^2 - 2*a*b*d^2*g^2)*B^2*x)*log
(d*x + c)^2)/(d^3*i) - integrate(-(B^2*a^2*d*g^2*log(e)^2 + 2*A*B*a^2*d*g^2
*log(e) + (B^2*b^2*d*g^2*log(e)^2 + 2*A*B*b^2*d*g^2*log(e))*x^2 + (B^2*b^2*
d*g^2*x^2 + 2*B^2*a*b*d*g^2*x + B^2*a^2*d*g^2)*log(b*x + a)^2 + 2*(B^2*a*b*
d*g^2*log(e)^2 + 2*A*B*a*b*d*g^2*log(e))*x + 2*(B^2*a^2*d*g^2*log(e) + A*B*
a^2*d*g^2 + (B^2*b^2*d*g^2*log(e) + A*B*b^2*d*g^2)*x^2 + 2*(B^2*a*b*d*g^2*l
og(e) + A*B*a*b*d*g^2)*x)*log(b*x + a) - (2*B^2*a^2*d*g^2*log(e) + 2*A*B*a^
2*d*g^2 + (2*A*B*b^2*d*g^2 + (2*g^2*log(e) + g^2)*B^2*b^2*d)*x^2 + 2*(2*A*B
*a*b*d*g^2 - (b^2*c*g^2 - 2*(g^2*log(e) + g^2)*a*b*d)*B^2)*x + 2*(B^2*b^2*d
*g^2*x^2 + 2*B^2*a*b*d*g^2*x + B^2*a^2*d*g^2)*log(b*x + a))*log(d*x + c))/(
d^2*i*x + c*d*i), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^2\,{\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}^2}{c\,i+d\,i\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x),
x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x),
 x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{g^2\left(\int \frac{A^2a^2}{c+dx}\,dx + \int \frac{A^2b^2x^2}{c+dx}\,dx + \int \frac{B^2a^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)^2}{c+dx}\,dx + \int \frac{2ABa^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{c+dx}\,dx + \int \frac{2A^2abx}{c+dx}\,dx + \int \frac{B^2b^2x^2\log\left(\cdots\right.}{c+dx}\cdots\right.}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i),x)
```

```
[Out] g**2*(Integral(A**2*a**2/(c + d*x), x) + Integral(A**2*b**2*x**2/(c + d*x),
 x) + Integral(B**2*a**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(c + d*x),
 x) + Integral(2*A*B*a**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x
) + Integral(2*A**2*a*b*x/(c + d*x), x) + Integral(B**2*b**2*x**2*log(a*e/(
c + d*x) + b*e*x/(c + d*x))**2/(c + d*x), x) + Integral(2*A*B*b**2*x**2*log
(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x) + Integral(2*B**2*a*b*x*log
(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(c + d*x), x) + Integral(4*A*B*a*b*x*l
og(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x))/i
```

3.86 $\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ci+dix}\,dx$

Optimal. Leaf size=283

$$\frac{2Bg(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i}+\frac{2Bg(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i}+\frac{g(bc-ad)\log}{}$$

```
[Out] 2*B*(-a*d+b*c)*g*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^2/i
+g*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d/i+(-a*d+b*c)*g*ln((-a*d+b*c)/b/(
d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^2/i+2*B^2*(-a*d+b*c)*g*polylog(2,d*
(b*x+a)/b/(d*x+c))/d^2/i+2*B*(-a*d+b*c)*g*(A+B*ln(e*(b*x+a)/(d*x+c)))*polyl
og(2,d*(b*x+a)/b/(d*x+c))/d^2/i-2*B^2*(-a*d+b*c)*g*polylog(3,d*(b*x+a)/b/(d
*x+c))/d^2/i
```

Rubi [B] time = 4.13, antiderivative size = 1072, normalized size of antiderivative = 3.79, number of steps used = 68, number of rules used = 24, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.600, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$-\frac{B^2(bc-ad)g\log^3(c+dx)}{3d^2i}+\frac{B^2(bc-ad)g\log(a+bx)\log^2(c+dx)}{d^2i}-\frac{B^2(bc-ad)g\log\left(\frac{e(a+bx)}{c+dx}\right)\log^2(c+dx)}{d^2i}-\frac{AB}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x),x]
```

```
[Out] -((a*B^2*g*Log[a + b*x]^2)/(d*i)) + (B^2*(b*c - a*d)*g*Log[a + b*x]*Log[(c
+ d*x)^(-1)]^2)/(d^2*i) - (B^2*(b*c - a*d)*g*Log[-((d*(a + b*x))/(b*c - a*d
))]*Log[(c + d*x)^(-1)]^2)/(d^2*i) + (2*a*B*g*Log[a + b*x]*(A + B*Log[(e*(a
 + b*x))/(c + d*x)]))/(d*i) + (b*g*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2
)/(d*i) + (B^2*(b*c - a*d)*g*Log[a + b*x]^2*Log[c + d*x])/(d^2*i) + (2*b*B^
2*c*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^2*i) + (2*A*B*(b*c
 - a*d)*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^2*i) + (2*B^2*
(b*c - a*d)*g*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x])/(d^2*i) - (2*B
^2*(b*c - a*d)*g*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c +
 d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d^2*i) - (2*b*B*
c*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d^2*i) - ((b*c - a*
d)*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/(d^2*i) - (b*B^2*
c*g*Log[c + d*x]^2)/(d^2*i) - (A*B*(b*c - a*d)*g*Log[c + d*x]^2)/(d^2*i) +
(B^2*(b*c - a*d)*g*Log[a + b*x]*Log[c + d*x]^2)/(d^2*i) - (B^2*(b*c - a*d)*
g*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/(d^2*i) - (B^2*(b*c - a*d)*g
*Log[c + d*x]^3)/(3*d^2*i) + (2*a*B^2*g*Log[a + b*x]*Log[(b*(c + d*x))/(b*c
 - a*d)])/(d*i) - (B^2*(b*c - a*d)*g*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c
- a*d)])/(d^2*i) + (2*a*B^2*g*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d*
i) - (2*B^2*(b*c - a*d)*g*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*
d))])/(d^2*i) + (2*b*B^2*c*g*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i)
 + (2*A*B*(b*c - a*d)*g*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i) + (2
*B^2*(b*c - a*d)*g*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
])/(d^2*i) - (2*B^2*(b*c - a*d)*g*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log
[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i) +
 (2*B^2*(b*c - a*d)*g*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/(d^2*i) + (
2*B^2*(b*c - a*d)*g*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/(d^2*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
```

```
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86c+86dx}\,dx = \int\left(\frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86d} + \frac{(-bc+ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86d(c+dx)}\right) dx$$

$$= \frac{(bg)\int\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx}{86d} - \frac{((bc-ad)g)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}\,dx}{86d}$$

$$= \frac{bgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86d} - \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+}{86d^2}$$

$$= \frac{bgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86d} - \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+}{86d^2}$$

$$= \frac{bgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86d} - \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+}{86d^2}$$

$$= \frac{bgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86d} - \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+}{86d^2}$$

$$= \frac{aBg\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{43d} + \frac{bgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86d} -$$

$$= \frac{aBg\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{43d} + \frac{bgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86d} -$$

$$= \frac{aBg\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{43d} + \frac{bgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86d} -$$

$$= \frac{aBg\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{43d} + \frac{bgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86d} -$$

$$= \frac{aBg\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{43d} + \frac{bgx\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{86d} +$$

$$= -\frac{aB^2g\log^2(a+bx)}{86d} + \frac{aBg\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{43d} + \frac{bgx\left(A\right.}{}$$

$$= -\frac{aB^2g\log^2(a+bx)}{86d} + \frac{aBg\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{43d} + \frac{bgx\left(A\right.}{}$$

$$= -\frac{aB^2g\log^2(a+bx)}{86d} + \frac{aBg\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{43d} + \frac{bgx\left(A\right.}{}$$

$$= -\frac{aB^2g\log^2(a+bx)}{86d} + \frac{B^2(bc-ad)g\log(a+bx)\log^2\left(\frac{1}{c+dx}\right)}{86d^2} + \frac{aBg\log}{}$$

$$= -\frac{aB^2g\log^2(a+bx)}{86d} + \frac{B^2(bc-ad)g\log(a+bx)\log^2\left(\frac{1}{c+dx}\right)}{86d^2} - \frac{B^2(bc-}{}$$

Mathematica [B] time = 0.72, size = 646, normalized size = 2.28

$$-\frac{g\left(A^2(bc-ad)\log(c+dx)+aABd\left(2\log(c+dx)\left(-\log\left(\frac{e(a+bx)}{c+dx}\right)+\log\left(\frac{a}{b}+x\right)-\log\left(\frac{c}{d}+x\right)\right)-2\left(\text{Li}_2\left(\frac{d(a+}{ad-}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i
*x),x]
```

```
[Out] -((g*(-(A^2*b*d*x) + A^2*(b*c - a*d)*Log[c + d*x] + a*A*B*d*(Log[c/d + x]^2
 + 2*(Log[a/b + x] - Log[c/d + x] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d
*x] - 2*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b
*x))/(-(b*c) + a*d)])) + A*B*(-2*d*(a + b*x)*(-1 + Log[a/b + x]) + 2*b*(c +
 d*x)*(-1 + Log[c/d + x]) - b*c*Log[c/d + x]^2 + 2*b*(Log[a/b + x] - Log[c/
d + x] - Log[(e*(a + b*x))/(c + d*x)])*(d*x - c*Log[c + d*x]) + 2*b*c*(Log[
a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c)
+ a*d)])) - B^2*(d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]^2 + b*c*Log[(e*(a
 + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - (b*c - a*d)*(Log[(b*
c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - 2*Log[(e*(a
+ b*x))/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c +
 d*x))/(b*c - a*d)]) + 2*b*c*(Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a
 + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])) + a*B^2
*d*(Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*Log[(
e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 2*PolyLog
[3, (d*(a + b*x))/(b*(c + d*x))])))/(d^2*i))
```

fricas [F] time = 0.99, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2bgx+A^2ag+\left(B^2bgx+B^2ag\right)\log\left(\frac{bex+ae}{dx+c}\right)^2+2\left(ABbgx+ABag\right)\log\left(\frac{bex+ae}{dx+c}\right)}{dix+ci},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorit
hm="fricas")
```

```
[Out] integral((A^2*b*g*x + A^2*a*g + (B^2*b*g*x + B^2*a*g)*log((b*e*x + a*e)/(d*
x + c))^2 + 2*(A*B*b*g*x + A*B*a*g)*log((b*e*x + a*e)/(d*x + c)))/(d*i*x +
c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorit
hm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.74, size = 0, normalized size = 0.00

$$\int\frac{\left(bgx+ag\right)\left(B\ln\left(\frac{(bx+a)e}{dx+c}\right)+A\right)^2}{dix+ci}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)
```

```
[Out] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2bg\left(\frac{x}{di}-\frac{c\log(dx+c)}{d^2i}\right)+\frac{A^2ag\log(dix+ci)}{di}+\frac{3\,B^2bdgx\log(dx+c)^2-\left(bcg-adg\right)B^2\log(dx+c)^3}{3\,d^2i}-\int-\frac{B^2ag}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorit
hm="maxima")
```

```
[Out] A^2*b*g*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + A^2*a*g*log(d*i*x + c*i)/(d*i)
 + 1/3*(3*B^2*b*d*g*x*log(d*x + c)^2 - (b*c*g - a*d*g)*B^2*log(d*x + c)^3)/
(d^2*i) - integrate(-(B^2*a*g*log(e)^2 + 2*A*B*a*g*log(e) + (B^2*b*g*x + B^
2*a*g)*log(b*x + a)^2 + (B^2*b*g*log(e)^2 + 2*A*B*b*g*log(e))*x + 2*(B^2*a*
g*log(e) + A*B*a*g + (B^2*b*g*log(e) + A*B*b*g)*x)*log(b*x + a) - 2*(B^2*a*
g*log(e) + A*B*a*g + ((g*log(e) + g)*B^2*b + A*B*b*g)*x + (B^2*b*g*x + B^2*
a*g)*log(b*x + a))*log(d*x + c))/(d*i*x + c*i), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)\,{\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}^2}{c\,i+d\,i\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x),x)
```

```
[Out] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x), x
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{g\left(\int\frac{A^2a}{c+dx}\,dx+\int\frac{A^2bx}{c+dx}\,dx+\int\frac{B^2a\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)^2}{c+dx}\,dx+\int\frac{2ABa\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{c+dx}\,dx+\int\frac{B^2bx\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)^2}{c+dx}\,dx+\int\frac{2ABbx\,\mathrm{l}}{}\right.}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i),x)
```

```
[Out] g*(Integral(A**2*a/(c + d*x), x) + Integral(A**2*b*x/(c + d*x), x) + Integr
al(B**2*a*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(c + d*x), x) + Integral(
2*A*B*a*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x) + Integral(B**2*
b*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(c + d*x), x) + Integral(2*A*B*
b*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c + d*x), x))/i
```

3.87 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{ci+dix}\,dx$

Optimal. Leaf size=127

$$-\frac{2B\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{di}-\frac{\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{di}+\frac{2B^2\text{Li}_3\left(\frac{d(a+bx)}{b(c+dx)}\right)}{di}$$

```
[Out] -ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d/i-2*B*(A+B*ln(e*(
b*x+a)/(d*x+c)))*polylog(2,d*(b*x+a)/b/(d*x+c))/d/i+2*B^2*polylog(3,d*(b*x+
a)/b/(d*x+c))/d/i
```

Rubi [B] time = 3.27, antiderivative size = 721, normalized size of antiderivative = 5.68, number of steps used = 46, number of rules used = 23, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.719, Rules used = {2524, 12, 2528, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

$$-\frac{2AB\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{di}+\frac{2B^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)\left(-\log\left(\frac{e(a+bx)}{c+dx}\right)+\log(a+bx)+\log\left(\frac{1}{c+dx}\right)\right)}{di}-\frac{2B^2\text{PolyLo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/(c*i + d*i*x),x]
```

```
[Out] -((B^2*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/(d*i)) + (B^2*Log[-((d*(a + b*x)
)/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/(d*i) + (B^2*Log[a + b*x]^2*Log[(b*(
c + d*x))/(b*c - a*d)])/(d*i) - (B^2*Log[a + b*x]^2*Log[i*(c + d*x)])/(d*i)
 - (2*B^2*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[i*(c + d*x)])/(d*i) + (A*B*L
og[i*(c + d*x)]^2)/(d*i) - (B^2*Log[a + b*x]*Log[i*(c + d*x)]^2)/(d*i) + (B
^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[i*(c + d*x)]^2)/(d*i) + (B^2*Log[i
*(c + d*x)]^3)/(3*d*i) - (2*A*B*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c*i +
 d*i*x])/(d*i) + (2*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + L
og[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c*i + d*i*x])/(d*i)
+ ((A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c*i + d*i*x])/(d*i) - (B^2*Lo
g[-((d*(a + b*x))/(b*c - a*d))]*Log[c*i + d*i*x]^2)/(d*i) + (B^2*Log[(e*(a
+ b*x))/(c + d*x)]*Log[c*i + d*i*x]^2)/(d*i) + (2*B^2*Log[a + b*x]*PolyLog[
2, -((d*(a + b*x))/(b*c - a*d))])/(d*i) - (2*A*B*PolyLog[2, (b*(c + d*x))/(
b*c - a*d)])/(d*i) - (2*B^2*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c + d*x))/(b
*c - a*d)])/(d*i) + (2*B^2*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a
+ b*x))/(c + d*x)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d*i) - (2*B^2*P
olyLog[3, -((d*(a + b*x))/(b*c - a*d))])/(d*i) - (2*B^2*PolyLog[3, (b*(c +
d*x))/(b*c - a*d)])/(d*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
```

```
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{87c+87dx}\,dx = \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(87c+87dx)}{87d} - \frac{(2B)\int \frac{(c+dx)\left(-\frac{de(a+bx)}{(c+dx)^2}+\frac{be}{c+dx}\right)\left(A+B\log\left(\frac{e(a\cdots}{c\cdots}\right.\right.}{e(a+bx)}}{87d}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(87c+87dx)}{87d} - \frac{(2B)\int \frac{(c+dx)\left(-\frac{de(a+bx)}{(c+dx)^2}+\frac{be}{c+dx}\right)\left(A+B\log\left(\frac{e(a\cdots}{c\cdots}\right.\right.}{a+bx}}{87de}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(87c+87dx)}{87d} - \frac{(2B)\int \frac{(bc-ad)e\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(87c+\cdots}{(a+bx)(c+dx)}}{87de}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(87c+87dx)}{87d} - \frac{(2B(bc-ad))\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log(87\cdots}{(a+bx)(c+dx)}}{87d}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(87c+87dx)}{87d} - \frac{(2B(bc-ad))\int\left(\frac{d\left(-A-B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log\cdots}{(bc-ad)(c+dx\cdots}\right.}{\cdots}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(87c+87dx)}{87d} - \frac{1}{87}(2B)\int \frac{\left(-A-B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\log\cdots}{c+dx}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(87c+87dx)}{87d} - \frac{1}{87}(2B)\int\left(\frac{A\log(87c+87dx)}{-c-dx}+\frac{B\cdots}{\cdots}\right.$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(87c+87dx)}{87d} - \frac{1}{87}(2AB)\int \frac{\log(87c+87dx)}{-c-dx}\,dx - \frac{1}{8\cdots}$$

$$= -\frac{2AB\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(87c+87dx)}{87d} + \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(87c+87dx\cdots}{87d}$$

$$= -\frac{2AB\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(87c+87dx)}{87d} + \frac{2B^2\log\left(-\frac{d(a+bx)}{bc-ad}\right)\left(\log(a+bx)+\log\cdots\right.}{8\cdots}$$

$$= -\frac{B^2\log^2(a+bx)\log(87(c+dx))}{87d} - \frac{2B^2\log(a+bx)\log\left(\frac{1}{c+dx}\right)\log(87(c+dx))}{87d}\cdots$$

$$= -\frac{B^2\log^2(a+bx)\log(87(c+dx))}{87d} - \frac{2B^2\log(a+bx)\log\left(\frac{1}{c+dx}\right)\log(87(c+dx))}{87d}\cdots$$

$$= -\frac{B^2\log(a+bx)\log^2\left(\frac{1}{c+dx}\right)}{87d} - \frac{B^2\log^2(a+bx)\log(87(c+dx))}{87d} - \frac{2B^2\log(a+\cdots}{\cdots}$$

$$= -\frac{B^2\log(a+bx)\log^2\left(\frac{1}{c+dx}\right)}{87d} + \frac{B^2\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log^2\left(\frac{1}{c+dx}\right)}{87d} - \frac{B^2\log^2(a+bx)\cdots}{8\cdots}$$

$$= -\frac{B^2\log(a+bx)\log^2\left(\frac{1}{c+dx}\right)}{87d} + \frac{B^2\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log^2\left(\frac{1}{c+dx}\right)}{87d} - \frac{B^2\log^2(a+bx)\cdots}{8\cdots}$$

$$= -\frac{B^2\log(a+bx)\log^2\left(\frac{1}{c+dx}\right)}{87d} + \frac{B^2\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log^2\left(\frac{1}{c+dx}\right)}{87d} - \frac{B^2\log^2(a+bx)\cdots}{8\cdots}$$

Mathematica [A] time = 0.26, size = 251, normalized size = 1.98

$$\frac{2AB\log(c+dx)\log\left(\frac{e(a+bx)}{c+dx}\right)+2AB\text{Li}_2\left(\frac{d(a+bx)}{ad-bc}\right)-2AB\log\left(\frac{a}{b}+x\right)\log(c+dx)+2AB\log\left(\frac{a}{b}+x\right)\log\left(\frac{b(c+dx)}{bc-ad}\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/(c*i + d*i*x),x]
```

```
[Out] (-(A*B*Log[c/d + x]^2) + A^2*Log[c + d*x] - 2*A*B*Log[a/b + x]*Log[c + d*x]
 + 2*A*B*Log[c/d + x]*Log[c + d*x] + 2*A*B*Log[(e*(a + b*x))/(c + d*x)]*Log
[c + d*x] + 2*A*B*Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] - B^2*Log[(e*
(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*A*B*PolyLog[2, (
d*(a + b*x))/(-(b*c) + a*d)] - 2*B^2*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2
, (d*(a + b*x))/(b*(c + d*x))] + 2*B^2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x
))])/(d*i)
```

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{B^2\log\left(\frac{bex+ae}{dx+c}\right)^2+2\,AB\log\left(\frac{bex+ae}{dx+c}\right)+A^2}{dix+ci},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="fricas")
```

```
[Out] integral((B^2*log((b*e*x + a*e)/(d*x + c))^2 + 2*A*B*log((b*e*x + a*e)/(d*x
 + c)) + A^2)/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 888, normalized size = 6.99

$$-\frac{B^2a\ln\left(-\frac{\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)d}{be}+1\right)\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{(ad-bc)\,i}+\frac{B^2bc\ln\left(-\frac{\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)d}{be}+1\right)\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{(ad-bc)\,di}-\frac{2ABa\ln\left(-\frac{-be+\left(\frac{be}{d}\right.}{}\right.}{(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i),x)
```

```
[Out] -1/i/(a*d-b*c)*A^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*a+1/d/i/(a*d-b*
c)*A^2*ln(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)*b*c-1/i/(a*d-b*c)*B^2*ln(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)^2*ln(-(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b*d/e+1)*a+1
/d/i/(a*d-b*c)*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*ln(-(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)/b*d/e+1)*b*c-2/i/(a*d-b*c)*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
polylog(2,(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b*d/e)*a+2/d/i/(a*d-b*c)*B^2*ln(b/d
*e+(a*d-b*c)/(d*x+c)/d*e)*polylog(2,(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b*d/e)*b*
c+2/i/(a*d-b*c)*B^2*polylog(3,(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b*d/e)*a-2/d/i/
(a*d-b*c)*B^2*polylog(3,(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/b*d/e)*b*c-2/i/(a*d-b
*c)*A*B*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*a+2/d/i/(a*d-b*c
```

```
)*A*B*dilog(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b*c-2/i/(a*d-b*c)*
A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
*d)/b/e)*a+2/d/i/(a*d-b*c)*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*ln(-(-b*e+(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*d)/b/e)*b*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{B^2\log(dx+c)^3}{3\,di}+\frac{A^2\log(dix+ci)}{di}-\int -\frac{B^2\log(bx+a)^2+B^2\log(e)^2+2\,AB\log(e)+2\left(B^2\log(e)+AB\right)\log}{dix+ci}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i),x, algorithm="maxima")
```

```
[Out] 1/3*B^2*log(d*x + c)^3/(d*i) + A^2*log(d*i*x + c*i)/(d*i) - integrate(-(B^2
*log(b*x + a)^2 + B^2*log(e)^2 + 2*A*B*log(e) + 2*(B^2*log(e) + A*B)*log(b*
x + a) - 2*(B^2*log(b*x + a) + B^2*log(e) + A*B)*log(d*x + c))/(d*i*x + c*i
), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(A+B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\right)^2}{c\,i+d\,i\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/(c*i + d*i*x),x)
```

```
[Out] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/(c*i + d*i*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A^2}{c+dx}\,dx+\int \frac{B^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)^2}{c+dx}\,dx+\int \frac{2AB\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{c+dx}\,dx}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i),x)
```

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

3.88 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)(ci+dix)}\,dx$

Optimal. Leaf size=44

$$\frac{\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^3}{3Bgi(bc-ad)}$$

```
[Out] 1/3*(A+B*ln(e*(b*x+a)/(d*x+c)))^3/B/(-a*d+b*c)/g/i
```

Rubi [C] time = 5.53, antiderivative size = 1163, normalized size of antiderivative = 26.43, number of steps used = 61, number of rules used = 29, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.690, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$-\frac{B^2\log^3(c+dx)}{3(bc-ad)gi}+\frac{B^2\log(a+bx)\log^2(c+dx)}{(bc-ad)gi}-\frac{B^2\log\left(\frac{e(a+bx)}{c+dx}\right)\log^2(c+dx)}{(bc-ad)gi}-\frac{AB\log^2(c+dx)}{(bc-ad)gi}+\frac{B^2\log^2(a+bx)}{(bc-ac}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)*(c*i + d*i*x)),x]
```

```
[Out] -((A*B*Log[a + b*x]^2)/((b*c - a*d)*g*i)) + (B^2*Log[a + b*x]*Log[(c + d*x)
^(-1)]^2)/((b*c - a*d)*g*i) - (B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c
 + d*x)^(-1)]^2)/((b*c - a*d)*g*i) - (B^2*Log[-((b*c - a*d)/(d*(a + b*x)))]
*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)*g*i) - (B^2*Log[a + b*x]*Log[
(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)*g*i) + (Log[a + b*x]*(A + B*Log[(e
*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)*g*i) + (B^2*Log[a + b*x]^2*Log[c +
d*x])/((b*c - a*d)*g*i) + (2*A*B*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c +
d*x])/((b*c - a*d)*g*i) + (2*B^2*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d
*x])/((b*c - a*d)*g*i) - (2*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a +
b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((
b*c - a*d)*g*i) - ((A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/((b
*c - a*d)*g*i) - (A*B*Log[c + d*x]^2)/((b*c - a*d)*g*i) + (B^2*Log[a + b*x]
*Log[c + d*x]^2)/((b*c - a*d)*g*i) - (B^2*Log[(e*(a + b*x))/(c + d*x)]*Log[
c + d*x]^2)/((b*c - a*d)*g*i) - (B^2*Log[c + d*x]^3)/(3*(b*c - a*d)*g*i) +
(2*A*B*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) - (B^
2*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (2*A*B
*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)*g*i) - (2*B^2*Log[a
 + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)*g*i) + (2*A*
B*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (2*B^2*Log[(c
+ d*x)^(-1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) - (2*
B^2*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Pol
yLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (2*B^2*Log[(e*(a +
b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)*g*
i) + (2*B^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)*g*i) + (
2*B^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (2*B^2*Pol
yLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)*g*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
```

```
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
```

```
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(88c+88dx)(ag+bgx)}\,dx=\int\left(\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc-ad)g(a+bx)}-\frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc-ad)g(c+dx)}\right)dx$$

$$=\frac{b\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}\,dx}{88(bc-ad)g}-\frac{d\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}\,dx}{88(bc-ad)g}$$

$$=\frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc-ad)g}-\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+dx)}{88(bc-ad)g}-\frac{B}{}$$

$$=\frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc-ad)g}-\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+dx)}{88(bc-ad)g}-\frac{B}{}$$

$$=\frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc-ad)g}-\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+dx)}{88(bc-ad)g}-\frac{B}{}$$

$$=\frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc-ad)g}-\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+dx)}{88(bc-ad)g}-\frac{B}{}$$

$$=\frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc-ad)g}-\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+dx)}{88(bc-ad)g}-\frac{B}{}$$

$$=\frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc-ad)g}-\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+dx)}{88(bc-ad)g}-\frac{(A}{}$$

$$=-\frac{B^2\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc-ad)g}+\frac{\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{88(bc-ad)g}-\frac{(A+B}{}$$

$$=-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc-ad)g}-\frac{B^2\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc-ad)g}+\frac{\log(a+b}{}$$

$$=-\frac{AB\log^2(a+bx)}{88(bc-ad)g}-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc-ad)g}-\frac{B^2\log(a+bx)\log^2\left(\right.}{88(bc-ad)g}$$

$$=-\frac{AB\log^2(a+bx)}{88(bc-ad)g}-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc-ad)g}-\frac{B^2\log(a+bx)\log^2\left(\right.}{88(bc-ad)g}$$

$$=-\frac{AB\log^2(a+bx)}{88(bc-ad)g}-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc-ad)g}-\frac{B^2\log(a+bx)\log^2\left(\right.}{88(bc-ad)g}$$

$$=-\frac{AB\log^2(a+bx)}{88(bc-ad)g}-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{88(bc-ad)g}-\frac{B^2\log(a+bx)\log^2\left(\right.}{88(bc-ad)g}$$

$$=-\frac{AB\log^2(a+bx)}{88(bc-ad)g}+\frac{B^2\log(a+bx)\log^2\left(\frac{1}{c+dx}\right)}{88(bc-ad)g}-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(\frac{e(a}{c+}\right.}{88(bc-ad)g}$$

$$AB\log^2(a+bx)\quad B^2\log(a+bx)\log^2\left(\frac{1}{c+dx}\right)\quad B^2\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log^2\left(\frac{1}{c+d}\right.$$

Mathematica [A] time = 0.37, size = 79, normalized size = 1.80

$$\frac{3A^2\log\left(\frac{e(a+bx)}{c+dx}\right)+3AB\log^2\left(\frac{e(a+bx)}{c+dx}\right)+B^2\log^3\left(\frac{e(a+bx)}{c+dx}\right)}{3bcgi-3adgi}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)*(c*i + d*i*
x)),x]
```

```
[Out] (3*A^2*Log[(e*(a + b*x))/(c + d*x)] + 3*A*B*Log[(e*(a + b*x))/(c + d*x)]^2
+ B^2*Log[(e*(a + b*x))/(c + d*x)]^3)/(3*b*c*g*i - 3*a*d*g*i)
```

fricas [B] time = 0.88, size = 87, normalized size = 1.98

$$\frac{B^2\log\left(\frac{bex+ae}{dx+c}\right)^3+3\,AB\log\left(\frac{bex+ae}{dx+c}\right)^2+3\,A^2\log\left(\frac{bex+ae}{dx+c}\right)}{3\,(bc-ad)gi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i),x, algorit
hm="fricas")
```

```
[Out] 1/3*(B^2*log((b*e*x + a*e)/(d*x + c))^3 + 3*A*B*log((b*e*x + a*e)/(d*x + c)
)^2 + 3*A^2*log((b*e*x + a*e)/(d*x + c)))/((b*c - a*d)*g*i)
```

giac [B] time = 0.68, size = 145, normalized size = 3.30

$$-\frac{\left(B^2ie\log\left(\frac{bxe+ae}{dx+c}\right)^3+3\,ABie\log\left(\frac{bxe+ae}{dx+c}\right)^2+3\,A^2ie\log\left(\frac{bxe+ae}{dx+c}\right)\right)\left(\frac{bc}{(bce-ade)(bc-ad)}-\frac{ad}{(bce-ade)(bc-ad)}\right)}{3\,g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i),x, algorit
hm="giac")
```

```
[Out] -1/3*(B^2*i*e*log((b*x*e + a*e)/(d*x + c))^3 + 3*A*B*i*e*log((b*x*e + a*e)/
(d*x + c))^2 + 3*A^2*i*e*log((b*x*e + a*e)/(d*x + c)))*(b*c/((b*c*e - a*d*e
)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/g
```

maple [B] time = 0.05, size = 312, normalized size = 7.09

$$-\frac{B^2ad\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^3}{3\,(ad-bc)^2\,gi}+\frac{B^2bc\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^3}{3\,(ad-bc)^2\,gi}-\frac{ABad\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{(ad-bc)^2\,gi}+\frac{ABbc\ln\left(\frac{be}{d}+\frac{(ad-bc)e}{(dx+c)d}\right)^2}{(ad-bc)^2\,gi}-\frac{A^2ad\ln\left(\frac{b}{\ldots}\right.}{(ad-\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)/(d*i*x+c*i),x)
```

```
[Out] -d/i/(a*d-b*c)^2/g*A^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/i/(a*d-b*c)^2/g*
A^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-d/i/(a*d-b*c)^2/g*A*B*ln(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)^2*a+1/i/(a*d-b*c)^2/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)^2*b*c-1/3*d/i/(a*d-b*c)^2/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*a+1/3/i
/(a*d-b*c)^2/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*b*c
```

maxima [B] time = 1.35, size = 397, normalized size = 9.02

$$B^2\left(\frac{\log(bx+a)}{(bc-ad)gi}-\frac{\log(dx+c)}{(bc-ad)gi}\right)\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)^2+2\,AB\left(\frac{\log(bx+a)}{(bc-ad)gi}-\frac{\log(dx+c)}{(bc-ad)gi}\right)\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i),x, algorit
hm="maxima")
```

```
[Out] B^2*(log(b*x + a)/((b*c - a*d)*g*i) - log(d*x + c)/((b*c - a*d)*g*i))*log(b
*e*x/(d*x + c) + a*e/(d*x + c))^2 + 2*A*B*(log(b*x + a)/((b*c - a*d)*g*i) -
 log(d*x + c)/((b*c - a*d)*g*i))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 1/3
*B^2*(3*(log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c) + log(d*x + c)^2)*log
(b*e*x/(d*x + c) + a*e/(d*x + c))/(b*c*g*i - a*d*g*i) - (log(b*x + a)^3 - 3
*log(b*x + a)^2*log(d*x + c) + 3*log(b*x + a)*log(d*x + c)^2 - log(d*x + c)
^3)/(b*c*g*i - a*d*g*i)) + A^2*(log(b*x + a)/((b*c - a*d)*g*i) - log(d*x +
c)/((b*c - a*d)*g*i)) - (log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c) + log
(d*x + c)^2)*A*B/(b*c*g*i - a*d*g*i)
```

mupad [B] time = 5.76, size = 96, normalized size = 2.18

$$-\frac{-6\mathrm{i}\,\mathrm{atan}\left(\frac{a\,d\,1\mathrm{i}+b\,c\,1\mathrm{i}+b\,d\,x\,2\mathrm{i}}{a\,d-b\,c}\right)\,A^2+3\,A\,B\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2+B^2\,\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^3}{3\,g\,i\,(a\,d-b\,c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)*(c*i + d*i*x)),x)
```

```
[Out] -(B^2*log((e*(a + b*x))/(c + d*x))^3 - A^2*atan((a*d*1i + b*c*1i + b*d*x*2i
)/(a*d - b*c))*6i + 3*A*B*log((e*(a + b*x))/(c + d*x))^2)/(3*g*i*(a*d - b*c
))
```

sympy [B] time = 1.63, size = 206, normalized size = 4.68

$$A^2\left(\frac{\log\left(x+\frac{-\frac{a^2d^2}{ad-bc}+\frac{2abcd}{ad-bc}+ad-\frac{b^2c^2}{ad-bc}+bc}{2bd}\right)}{gi\,(ad-bc)}-\frac{\log\left(x+\frac{\frac{a^2d^2}{ad-bc}-\frac{2abcd}{ad-bc}+ad+\frac{b^2c^2}{ad-bc}+bc}{2bd}\right)}{gi\,(ad-bc)}\right)-\frac{AB\log\left(\frac{e(a+bx)}{c+dx}\right)^2}{adgi-bcgi}-\frac{B^2\log\left(\frac{e(a+bx)}{c+dx}\right)^3}{3adgi-3bcgi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)/(d*i*x+c*i),x)
```

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

3.89 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^2(ci+dix)}\,dx$

Optimal. Leaf size=183

$$-\frac{d\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^3}{3Bg^2i(bc-ad)^2}-\frac{b(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{g^2i(a+bx)(bc-ad)^2}-\frac{2bB(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i(a+bx)(bc-ad)^2}-\frac{2bB^2(c+dx)}{g^2i(a+bx)(bc-ad)^2}$$

```
[Out] -2*b*B^2*(d*x+c)/(-a*d+b*c)^2/g^2/i/(b*x+a)-2*b*B*(d*x+c)*(A+B*ln(e*(b*x+a)
/(d*x+c)))/(-a*d+b*c)^2/g^2/i/(b*x+a)-b*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))
^2/(-a*d+b*c)^2/g^2/i/(b*x+a)-1/3*d*(A+B*ln(e*(b*x+a)/(d*x+c)))^3/B/(-a*d+b
*c)^2/g^2/i
```

Rubi [C] time = 6.33, antiderivative size = 1684, normalized size of antiderivative = 9.20, number of steps used = 87, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.738, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^2*(c*i + d*i*x)),
x]
```

```
[Out] (-2*B^2)/((b*c - a*d)*g^2*i*(a + b*x)) - (2*B^2*d*Log[a + b*x])/((b*c - a*d
)^2*g^2*i) + (A*B*d*Log[a + b*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[a +
b*x]^2)/((b*c - a*d)^2*g^2*i) - (B^2*d*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/
((b*c - a*d)^2*g^2*i) + (B^2*d*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d
*x)^(-1)]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[-((b*c - a*d)/(d*(a + b*x))
)]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[a + b
*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^2*g^2*i) - (2*B*(A + B*Log
[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)*g^2*i*(a + b*x)) - (2*B*d*Log[a +
b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g^2*i) - (A + B*L
og[(e*(a + b*x))/(c + d*x)])^2/((b*c - a*d)*g^2*i*(a + b*x)) - (d*Log[a + b
*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^2*g^2*i) + (2*B^2*
d*Log[c + d*x])/((b*c - a*d)^2*g^2*i) - (B^2*d*Log[a + b*x]^2*Log[c + d*x])
/((b*c - a*d)^2*g^2*i) - (2*A*B*d*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c +
 d*x])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*Log[-((d*(a + b*x))/(b*c - a*d))]*L
og[c + d*x])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*Log[a + b*x]*Log[(c + d*x)^(-
1)]*Log[c + d*x])/((b*c - a*d)^2*g^2*i) + (2*B^2*d*Log[-((d*(a + b*x))/(b*c
 - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)
])*Log[c + d*x])/((b*c - a*d)^2*g^2*i) + (2*B*d*(A + B*Log[(e*(a + b*x))/(c
 + d*x)])*Log[c + d*x])/((b*c - a*d)^2*g^2*i) + (d*(A + B*Log[(e*(a + b*x))
/(c + d*x)])^2*Log[c + d*x])/((b*c - a*d)^2*g^2*i) + (A*B*d*Log[c + d*x]^2)
/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[c + d*x]^2)/((b*c - a*d)^2*g^2*i) - (B^
2*d*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[(e*(a +
 b*x))/(c + d*x)]*Log[c + d*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[c + d*
x]^3)/(3*(b*c - a*d)^2*g^2*i) - (2*A*B*d*Log[a + b*x]*Log[(b*(c + d*x))/(b*
c - a*d)])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*Log[a + b*x]*Log[(b*(c + d*x))/
(b*c - a*d)])/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[a + b*x]^2*Log[(b*(c + d*x
))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i) - (2*A*B*d*PolyLog[2, -((d*(a + b*x)
)/(b*c - a*d))])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*PolyLog[2, -((d*(a + b*x)
)/(b*c - a*d))])/((b*c - a*d)^2*g^2*i) + (2*B^2*d*Log[a + b*x]*PolyLog[2, -
((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g^2*i) - (2*A*B*d*PolyLog[2, (
b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*PolyLog[2, (b*(
c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*Log[(c + d*x)^(-1)
```

```
]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i) + (2*B^2*d*(
Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[
2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*Log[(e*(a +
 b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^2
*g^2*i) - (2*B^2*d*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2
*g^2*i) - (2*B^2*d*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^
2*i) - (2*B^2*d*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^2*g
^2*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
```

```
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(89c+89dx)(ag+bgx)^2}\,dx = \int\left(\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc-ad)g^2(a+bx)^2} - \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc-ad)^2g^2(a+bx)} + \frac{d^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc-ad)^2g^2(c+\cdots}\cdots\right.$$

$$= -\frac{(bd)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}\,dx}{89(bc-ad)^2g^2} + \frac{d^2\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}\,dx}{89(bc-ad)^2g^2} + \frac{b\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(a+bx)^2}\cdots}{89(bc-ad)g^2}\cdots$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc-ad)^2g^2} + \frac{d\left(A+B\log\cdots\right.}{89\cdots}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc-ad)^2g^2} + \frac{d\left(A+B\log\cdots\right.}{89\cdots}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc-ad)^2g^2} + \frac{d\left(A+B\log\cdots\right.}{89\cdots}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{89(bc-ad)^2g^2} + \frac{d\left(A+B\log\cdots\right.}{89\cdots}$$

$$= -\frac{2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{89(bc-ad)g^2(a+bx)} - \frac{2Bd\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{89(bc-ad)^2g^2} - \frac{\left(A+B\,\mathrm{lo}\cdots\right.}{89(bc-a\cdots}$$

$$= -\frac{2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{89(bc-ad)g^2(a+bx)} - \frac{2Bd\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{89(bc-ad)^2g^2} - \frac{\left(A+B\,\mathrm{lo}\cdots\right.}{89(bc-a\cdots}$$

$$= \frac{B^2d\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{89(bc-ad)^2g^2} - \frac{2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{89(bc-ad)g^2(a+bx)} - \frac{2Bd\log(a+bx)\left(A\cdots\right.}{89(bc-\cdots}$$

$$= -\frac{2B^2}{89(bc-ad)g^2(a+bx)} - \frac{2B^2d\log(a+bx)}{89(bc-ad)^2g^2} + \frac{B^2d\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{89(bc-ad)^2g^2}\cdots$$

$$= -\frac{2B^2}{89(bc-ad)g^2(a+bx)} - \frac{2B^2d\log(a+bx)}{89(bc-ad)^2g^2} + \frac{ABd\log^2(a+bx)}{89(bc-ad)^2g^2} + \frac{B^2d\log\left(-\cdots\right.}{89\cdots}$$

$$= -\frac{2B^2}{89(bc-ad)g^2(a+bx)} - \frac{2B^2d\log(a+bx)}{89(bc-ad)^2g^2} + \frac{ABd\log^2(a+bx)}{89(bc-ad)^2g^2} + \frac{B^2d\log^2(a\cdots}{89(bc-ad\cdots}$$

$$= -\frac{2B^2}{89(bc-ad)g^2(a+bx)} - \frac{2B^2d\log(a+bx)}{89(bc-ad)^2g^2} + \frac{ABd\log^2(a+bx)}{89(bc-ad)^2g^2} + \frac{B^2d\log^2(a\cdots}{89(bc-ad\cdots}$$

$$= -\frac{2B^2}{89(bc-ad)g^2(a+bx)} - \frac{2B^2d\log(a+bx)}{89(bc-ad)^2g^2} + \frac{ABd\log^2(a+bx)}{89(bc-ad)^2g^2} + \frac{B^2d\log^2(a\cdots}{89(bc-ad\cdots}$$

$$= -\frac{2B^2}{89(bc-ad)g^2(a+bx)} - \frac{2B^2d\log(a+bx)}{89(bc-ad)^2g^2} + \frac{ABd\log^2(a+bx)}{89(bc-ad)^2g^2} + \frac{B^2d\log^2(a\cdots}{89(bc-ad\cdots}$$

Mathematica [A] time = 0.67, size = 186, normalized size = 1.02

$$-\frac{3\left(A^2+2AB+2B^2\right)(-d(a+bx)\log(c+dx)-ad+bc)+3d\left(A^2+2AB+2B^2\right)(a+bx)\log(a+bx)+3B(a}{3g^2i(a+bx)(b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^2*(c*i + d*
i*x)),x]
```

```
[Out] -1/3*(3*(A^2 + 2*A*B + 2*B^2)*d*(a + b*x)*Log[a + b*x] + 6*B*(A + B)*(b*c -
 a*d)*Log[(e*(a + b*x))/(c + d*x)] + 3*B*(a*A*d + A*b*d*x + b*B*(c + d*x))*
Log[(e*(a + b*x))/(c + d*x)]^2 + B^2*d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x
)]^3 + 3*(A^2 + 2*A*B + 2*B^2)*(b*c - a*d - d*(a + b*x)*Log[c + d*x]))/((b*
c - a*d)^2*g^2*i*(a + b*x))
```

fricas [A] time = 0.95, size = 231, normalized size = 1.26

$$-\frac{\left(B^2bdx+B^2ad\right)\log\left(\frac{bex+ae}{dx+c}\right)^3+3\left(A^2+2\,AB+2\,B^2\right)bc-3\left(A^2+2\,AB+2\,B^2\right)ad+3\left(B^2bc+ABad+\left(AB\right.\right.}{3\left(\left(b^3c^2-2\,ab^2cd+a^2bd^2\right)g^2ix+\left(ab^2c\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i),x, algor
ithm="fricas")
```

```
[Out] -1/3*((B^2*b*d*x + B^2*a*d)*log((b*e*x + a*e)/(d*x + c))^3 + 3*(A^2 + 2*A*B
 + 2*B^2)*b*c - 3*(A^2 + 2*A*B + 2*B^2)*a*d + 3*(B^2*b*c + A*B*a*d + (A*B +
 B^2)*b*d*x)*log((b*e*x + a*e)/(d*x + c))^2 + 3*(A^2*a*d + (A^2 + 2*A*B + 2
*B^2)*b*d*x + 2*(A*B + B^2)*b*c)*log((b*e*x + a*e)/(d*x + c)))/((b^3*c^2 -
2*a*b^2*c*d + a^2*b*d^2)*g^2*i*x + (a*b^2*c^2 - 2*a^2*b*c*d + a^3*d^2)*g^2*
i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i),x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.05, size = 1201, normalized size = 6.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i),x)
```

```
[Out] -d^2/i/(a*d-b*c)^3/g^2*A^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+d/i/(a*d-b*c)^
3/g^2*A^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-d*e/i/(a*d-b*c)^3/g^2*A^2*b/(
1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+e/i/(a*d-b*c)^3/g^2*A^2*b^2/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-d^2/i/(a*d-b*c)^3/g^2*A*B*ln(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)^2*a+d/i/(a*d-b*c)^3/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)^2*b*c-2*d*e/i/(a*d-b*c)^3/g^2*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2*e/i/(a*d-b*c)^3/g^2*A*B*b^2/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2*d*e/i
```

```
/(a*d-b*c)^3/g^2*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*e/i/(a*d
-b*c)^3/g^2*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-1/3*d^2/i/(a*
d-b*c)^3/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*a+1/3*d/i/(a*d-b*c)^3/g^
2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*b*c-d*e/i/(a*d-b*c)^3/g^2*B^2*b/(1/
(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+e/
i/(a*d-b*c)^3/g^2*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)^2*c-2*d*e/i/(a*d-b*c)^3/g^2*B^2*b/(1/(d*x+c)*a*e-1/(
d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2*e/i/(a*d-b*c)^3/g
^2*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)*c-2*d*e/i/(a*d-b*c)^3/g^2*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)*a+2*e/i/(a*d-b*c)^3/g^2*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)*c
```

maxima [B] time = 1.99, size = 1008, normalized size = 5.51

$$-B^2\left(\frac{1}{\left(b^2c-abd\right)g^2ix+\left(abc-a^2d\right)g^2i}+\frac{d\log\left(bx+a\right)}{\left(b^2c^2-2\,abcd+a^2d^2\right)g^2i}-\frac{d\log\left(dx+c\right)}{\left(b^2c^2-2\,abcd+a^2d^2\right)g^2i}\right)\log\left(\frac{bex}{dx+c}+\frac{}{d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i),x, algor
ithm="maxima")
```

```
[Out] -B^2*(1/((b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/
((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*
c*d + a^2*d^2)*g^2*i))*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 - 2*A*B*(1/((
b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/((b^2*c^2
- 2*a*b*c*d + a^2*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*
d^2)*g^2*i))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) + 1/3*B^2*(3*((b*d*x + a*
d)*log(b*x + a)^2 + (b*d*x + a*d)*log(d*x + c)^2 - 2*b*c + 2*a*d - 2*(b*d*x
 + a*d)*log(b*x + a) + 2*(b*d*x + a*d - (b*d*x + a*d)*log(b*x + a))*log(d*x
 + c))*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(a*b^2*c^2*g^2*i - 2*a^2*b*c*d*
g^2*i + a^3*d^2*g^2*i + (b^3*c^2*g^2*i - 2*a*b^2*c*d*g^2*i + a^2*b*d^2*g^2*
i)*x) - ((b*d*x + a*d)*log(b*x + a)^3 - (b*d*x + a*d)*log(d*x + c)^3 - 3*(b
*d*x + a*d)*log(b*x + a)^2 - 3*(b*d*x + a*d - (b*d*x + a*d)*log(b*x + a))*l
og(d*x + c)^2 + 6*b*c - 6*a*d + 6*(b*d*x + a*d)*log(b*x + a) - 3*(2*b*d*x +
 (b*d*x + a*d)*log(b*x + a)^2 + 2*a*d - 2*(b*d*x + a*d)*log(b*x + a))*log(d
*x + c))/(a*b^2*c^2*g^2*i - 2*a^2*b*c*d*g^2*i + a^3*d^2*g^2*i + (b^3*c^2*g^
2*i - 2*a*b^2*c*d*g^2*i + a^2*b*d^2*g^2*i)*x)) - A^2*(1/((b^2*c - a*b*d)*g^
2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2
*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i)) + ((
b*d*x + a*d)*log(b*x + a)^2 + (b*d*x + a*d)*log(d*x + c)^2 - 2*b*c + 2*a*d
- 2*(b*d*x + a*d)*log(b*x + a) + 2*(b*d*x + a*d - (b*d*x + a*d)*log(b*x + a
))*log(d*x + c))*A*B/(a*b^2*c^2*g^2*i - 2*a^2*b*c*d*g^2*i + a^3*d^2*g^2*i +
 (b^3*c^2*g^2*i - 2*a*b^2*c*d*g^2*i + a^2*b*d^2*g^2*i)*x)
```

mupad [B] time = 6.37, size = 419, normalized size = 2.29

$$\frac{A^2+2\,A\,B+2\,B^2}{\left(a\,d-b\,c\right)\,\left(a\,g^2\,i+b\,g^2\,i\,x\right)}-\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)^2\left(\frac{B\,d\,\left(A+B\right)}{g^2\,i\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}-\frac{B^2\,\left(a\,d-b\,c\right)}{b\,d\,g^2\,i\,\left(\frac{x}{d}+\frac{a}{b\,d}\right)\,\left(a^2\,d^2-2\,a\,b\,c\,d\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^2*(c*i + d*i*x)),
x)
```

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

```
^2*(a*d - b*c))/(b*d*g^2*i*(x/d + a/(b*d))*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))
) - (B^2*d*log((e*(a + b*x))/(c + d*x))^3)/(3*g^2*i*(a^2*d^2 + b^2*c^2 - 2*
a*b*c*d)) + (d*atan((d*(2*b*d*x + (a^2*d^2*g^2*i - b^2*c^2*g^2*i)/(g^2*i*(a
*d - b*c)))*(A^2 + 2*B^2 + 2*A*B)*1i)/((a*d - b*c)*(A^2*d + 2*B^2*d + 2*A*B
*d)))*(A^2 + 2*B^2 + 2*A*B)*2i)/(g^2*i*(a*d - b*c)^2) + (2*B*log((e*(a + b*
x))/(c + d*x))*(a*d - b*c)*(A + B))/(b*d*g^2*i*(x/d + a/(b*d))*(a^2*d^2 + b
^2*c^2 - 2*a*b*c*d))
```

sympy [B] time = 5.14, size = 541, normalized size = 2.96

$$-\frac{B^2d\log\left(\frac{e(a+bx)}{c+dx}\right)^3}{3a^2d^2g^2i-6abcdg^2i+3b^2c^2g^2i}+\frac{\left(2AB+2B^2\right)\log\left(\frac{e(a+bx)}{c+dx}\right)}{a^2dg^2i-abcg^2i+abdg^2ix-b^2cg^2ix}+\left(A^2+2AB+2B^2\right)\left(\frac{d\log\left(x+\frac{-\frac{a^3d^4}{(ad-bc)\cdots}}{\cdots}\right)}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**2/(d*i*x+c*i),x)
```

```
[Out] -B**2*d*log(e*(a + b*x)/(c + d*x))**3/(3*a**2*d**2*g**2*i - 6*a*b*c*d*g**2*
i + 3*b**2*c**2*g**2*i) + (2*A*B + 2*B**2)*log(e*(a + b*x)/(c + d*x))/(a**2
*d*g**2*i - a*b*c*g**2*i + a*b*d*g**2*i*x - b**2*c*g**2*i*x) + (A**2 + 2*A*
B + 2*B**2)*(d*log(x + (-a**3*d**4/(a*d - b*c)**2 + 3*a**2*b*c*d**3/(a*d -
b*c)**2 - 3*a*b**2*c**2*d**2/(a*d - b*c)**2 + a*d**2 + b**3*c**3*d/(a*d - b
*c)**2 + b*c*d)/(2*b*d**2))/(g**2*i*(a*d - b*c)**2) - d*log(x + (a**3*d**4/
(a*d - b*c)**2 - 3*a**2*b*c*d**3/(a*d - b*c)**2 + 3*a*b**2*c**2*d**2/(a*d -
 b*c)**2 + a*d**2 - b**3*c**3*d/(a*d - b*c)**2 + b*c*d)/(2*b*d**2))/(g**2*i
*(a*d - b*c)**2) + 1/(a**2*d*g**2*i - a*b*c*g**2*i + x*(a*b*d*g**2*i - b**2
*c*g**2*i))) + (-A*B*a*d - A*B*b*d*x - B**2*b*c - B**2*b*d*x)*log(e*(a + b*
x)/(c + d*x))**2/(a**3*d**2*g**2*i - 2*a**2*b*c*d*g**2*i + a**2*b*d**2*g**2
*i*x + a*b**2*c**2*g**2*i - 2*a*b**2*c*d*g**2*i*x + b**3*c**2*g**2*i*x)
```

3.90 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3(ci+dix)}\,dx$

Optimal. Leaf size=343

$$-\frac{b^2(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2g^3i(a+bx)^2(bc-ad)^3}-\frac{b^2B(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^3i(a+bx)^2(bc-ad)^3}+\frac{d^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^3}{3Bg^3i(bc-ad)^3}+\frac{2bd(c+dx)\left(\right.}{g^3i(a}$$

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

Rubi [C] time = 7.37, antiderivative size = 1899, normalized size of antiderivative = 5.54, number of steps used = 117, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.738, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^3*(c*i + d*i*x)),
x]
```

```
[Out] -B^2/(4*(b*c - a*d)*g^3*i*(a + b*x)^2) + (7*B^2*d)/(2*(b*c - a*d)^2*g^3*i*(
a + b*x)) + (7*B^2*d^2*Log[a + b*x])/(2*(b*c - a*d)^3*g^3*i) - (A*B*d^2*Log
[a + b*x]^2)/((b*c - a*d)^3*g^3*i) - (3*B^2*d^2*Log[a + b*x]^2)/(2*(b*c - a
*d)^3*g^3*i) + (B^2*d^2*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)^3*
g^3*i) - (B^2*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/
((b*c - a*d)^3*g^3*i) - (B^2*d^2*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[(e*(
a + b*x))/(c + d*x)]^2)/((b*c - a*d)^3*g^3*i) - (B^2*d^2*Log[a + b*x]*Log[(
e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^3*g^3*i) - (B*(A + B*Log[(e*(a + b*
x))/(c + d*x)]))/(2*(b*c - a*d)*g^3*i*(a + b*x)^2) + (3*B*d*(A + B*Log[(e*(
a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g^3*i*(a + b*x)) + (3*B*d^2*Log[a + b
*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^3*g^3*i) - (A + B*Lo
g[(e*(a + b*x))/(c + d*x)])^2/(2*(b*c - a*d)*g^3*i*(a + b*x)^2) + (d*(A + B
*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^2*g^3*i*(a + b*x)) + (d^2*Lo
g[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^3*g^3*i) -
(7*B^2*d^2*Log[c + d*x])/(2*(b*c - a*d)^3*g^3*i) + (B^2*d^2*Log[a + b*x]^2*
Log[c + d*x])/((b*c - a*d)^3*g^3*i) + (2*A*B*d^2*Log[-((d*(a + b*x))/(b*c -
 a*d))]*Log[c + d*x])/((b*c - a*d)^3*g^3*i) + (3*B^2*d^2*Log[-((d*(a + b*x)
)/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^3*g^3*i) + (2*B^2*d^2*Log[a + b*
x]*Log[(c + d*x)^(-1)]*Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (2*B^2*d^2*Log
[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e
*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (3*B*d^2*(A +
 B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (d^2
*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/((b*c - a*d)^3*g^3*i)
 - (A*B*d^2*Log[c + d*x]^2)/((b*c - a*d)^3*g^3*i) - (3*B^2*d^2*Log[c + d*x]
^2)/(2*(b*c - a*d)^3*g^3*i) + (B^2*d^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c -
 a*d)^3*g^3*i) - (B^2*d^2*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/((b*
c - a*d)^3*g^3*i) - (B^2*d^2*Log[c + d*x]^3)/(3*(b*c - a*d)^3*g^3*i) + (2*A
*B*d^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) +
 (3*B^2*d^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3
*i) - (B^2*d^2*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^
```

```
3*g^3*i) + (2*A*B*d^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d
)^3*g^3*i) + (3*B^2*d^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a
*d)^3*g^3*i) - (2*B^2*d^2*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*
d))])/((b*c - a*d)^3*g^3*i) + (2*A*B*d^2*PolyLog[2, (b*(c + d*x))/(b*c - a*
d)])/((b*c - a*d)^3*g^3*i) + (3*B^2*d^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d
)])/((b*c - a*d)^3*g^3*i) + (2*B^2*d^2*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c
 + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) - (2*B^2*d^2*(Log[a + b*x] + L
og[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c + d*x))
/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) + (2*B^2*d^2*Log[(e*(a + b*x))/(c + d*
x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^3*g^3*i) + (2*B
^2*d^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^3*i) + (2
*B^2*d^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) + (2*
B^2*d^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^3*g^3*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
```

```
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
```

```
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(90c+90dx)(ag+bgx)^3}\,dx = \int \left(\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc-ad)g^3(a+bx)^3} - \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc-ad)^2g^3(a+bx)^2} + \frac{bd^2\left(A+B\log\left(\frac{e(a+\cdots}{c+\cdots}\right.\right.}{90(bc-ad)^3g^3(a+\cdots}\right.$$

$$= \frac{\left(bd^2\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}\,dx}{90(bc-ad)^3g^3} - \frac{d^3\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}\,dx}{90(bc-ad)^3g^3} - \frac{(bd)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\cdots}{(a+bx)^2}}{90(bc-ad)^2g^3}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{180(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(A+B\,\mathrm{l}\cdots\right.}{90(bc-ad)^3\cdots}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{180(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(A+B\,\mathrm{l}\cdots\right.}{90(bc-ad)^3\cdots}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{180(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(A+B\,\mathrm{l}\cdots\right.}{90(bc-ad)^3\cdots}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{180(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{90(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(A+B\,\mathrm{l}\cdots\right.}{90(bc-ad)^3\cdots}$$

$$= -\frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{180(bc-ad)g^3(a+bx)^2} + \frac{Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{30(bc-ad)^2g^3(a+bx)} + \frac{Bd^2\log(a+bx)\left(A+\cdots\right.}{30(bc-ad)\cdots}$$

$$= -\frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{180(bc-ad)g^3(a+bx)^2} + \frac{Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{30(bc-ad)^2g^3(a+bx)} + \frac{Bd^2\log(a+bx)\left(A+\cdots\right.}{30(bc-ad)\cdots}$$

$$= -\frac{B^2d^2\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{90(bc-ad)^3g^3} - \frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{180(bc-ad)g^3(a+bx)^2} + \frac{Bd\left(A+B\log\left(\cdots\right.\right.}{30(bc-ad)^2g^3(\cdots}$$

$$= -\frac{B^2}{360(bc-ad)g^3(a+bx)^2} + \frac{7B^2d}{180(bc-ad)^2g^3(a+bx)} + \frac{7B^2d^2\log(a+bx)}{180(bc-ad)^3g^3} - \frac{B^2\cdots}{\cdots}$$

$$= -\frac{B^2}{360(bc-ad)g^3(a+bx)^2} + \frac{7B^2d}{180(bc-ad)^2g^3(a+bx)} + \frac{7B^2d^2\log(a+bx)}{180(bc-ad)^3g^3} - \frac{A\cdots}{\cdots}$$

$$= -\frac{B^2}{360(bc-ad)g^3(a+bx)^2} + \frac{7B^2d}{180(bc-ad)^2g^3(a+bx)} + \frac{7B^2d^2\log(a+bx)}{180(bc-ad)^3g^3} - \frac{A\cdots}{\cdots}$$

$$= -\frac{B^2}{360(bc-ad)g^3(a+bx)^2} + \frac{7B^2d}{180(bc-ad)^2g^3(a+bx)} + \frac{7B^2d^2\log(a+bx)}{180(bc-ad)^3g^3} - \frac{A\cdots}{\cdots}$$

$$= -\frac{B^2}{360(bc-ad)g^3(a+bx)^2} + \frac{7B^2d}{180(bc-ad)^2g^3(a+bx)} + \frac{7B^2d^2\log(a+bx)}{180(bc-ad)^3g^3} - \frac{A\cdots}{\cdots}$$

$$= -\frac{B^2}{360(bc-ad)g^3(a+bx)^2} + \frac{7B^2d}{180(bc-ad)^2g^3(a+bx)} + \frac{7B^2d^2\log(a+bx)}{180(bc-ad)^3g^3} - \frac{A\cdots}{\cdots}$$

Mathematica [A] time = 1.11, size = 318, normalized size = 0.93

$$-6B\left(-2a^2Ad^2-4abd(Adx+B(c+dx))+b^2\left(B\left(c^2-2cdx-3d^2x^2\right)-2Ad^2x^2\right)\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)-6d^2\left(2A^2+6\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^3*(c*i + d*
i*x)),x]
```

```
[Out] (-3*(2*A^2 + 2*A*B + B^2)*(b*c - a*d)^2 + 6*(2*A^2 + 6*A*B + 7*B^2)*d*(b*c
- a*d)*(a + b*x) + 6*(2*A^2 + 6*A*B + 7*B^2)*d^2*(a + b*x)^2*Log[a + b*x] -
 6*B*(b*c - a*d)*(-6*a*A*d - 7*a*B*d + b*B*(c - 6*d*x) + 2*A*b*(c - 2*d*x))
*Log[(e*(a + b*x))/(c + d*x)] - 6*B*(-2*a^2*A*d^2 - 4*a*b*d*(A*d*x + B*(c +
 d*x)) + b^2*(-2*A*d^2*x^2 + B*(c^2 - 2*c*d*x - 3*d^2*x^2)))*Log[(e*(a + b*
x))/(c + d*x)]^2 + 4*B^2*d^2*(a + b*x)^2*Log[(e*(a + b*x))/(c + d*x)]^3 - 6
*(2*A^2 + 6*A*B + 7*B^2)*d^2*(a + b*x)^2*Log[c + d*x])/(12*(b*c - a*d)^3*g^
3*i*(a + b*x)^2)
```

fricas [A] time = 0.66, size = 540, normalized size = 1.57

$$-\frac{3\left(2A^2+2AB+B^2\right)b^2c^2-24\left(A^2+2AB+2B^2\right)abcd+3\left(6A^2+14AB+15B^2\right)a^2d^2-4\left(B^2b^2d^2x^2+2B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i),x, algor
ithm="fricas")
```

```
[Out] -1/12*(3*(2*A^2 + 2*A*B + B^2)*b^2*c^2 - 24*(A^2 + 2*A*B + 2*B^2)*a*b*c*d +
 3*(6*A^2 + 14*A*B + 15*B^2)*a^2*d^2 - 4*(B^2*b^2*d^2*x^2 + 2*B^2*a*b*d^2*x
 + B^2*a^2*d^2)*log((b*e*x + a*e)/(d*x + c))^3 - 6*((2*A*B + 3*B^2)*b^2*d^2
*x^2 - B^2*b^2*c^2 + 4*B^2*a*b*c*d + 2*A*B*a^2*d^2 + 2*(B^2*b^2*c*d + 2*(A*
B + B^2)*a*b*d^2)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 6*((2*A^2 + 6*A*B + 7
*B^2)*b^2*c*d - (2*A^2 + 6*A*B + 7*B^2)*a*b*d^2)*x - 6*((2*A^2 + 6*A*B + 7*
B^2)*b^2*d^2*x^2 + 2*A^2*a^2*d^2 - (2*A*B + B^2)*b^2*c^2 + 8*(A*B + B^2)*a*
b*c*d + 2*((2*A*B + 3*B^2)*b^2*c*d + 2*(A^2 + 2*A*B + 2*B^2)*a*b*d^2)*x)*lo
g((b*e*x + a*e)/(d*x + c)))/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a
^3*b^2*d^3)*g^3*i*x^2 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^2*d + 3*a^3*b^2*c*d^2 -
a^4*b*d^3)*g^3*i*x + (a^2*b^3*c^3 - 3*a^3*b^2*c^2*d + 3*a^4*b*c*d^2 - a^5*d
^3)*g^3*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i),x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 2144, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i),x)
```

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

<u>maxima</u> [B] time = 3.11, size = 2115, normalized size = 6.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i),x, algor
ithm="maxima")
```

```
[Out] 1/2*B^2*((2*b*d*x - b*c + 3*a*d)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3
*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a^2*b^2*c^2 -
 2*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2
*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i) - 2*d^2*log(d*x + c)/((b^3*c^3 - 3*a*b
^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i))*log(b*e*x/(d*x + c) + a*e/(d*x
+ c))^2 + A*B*((2*b*d*x - b*c + 3*a*d)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^
2)*g^3*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a^2*b^2
*c^2 - 2*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d^2*log(b*x + a)/((b^3*c^3 - 3*a*b
^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i) - 2*d^2*log(d*x + c)/((b^3*c^3 -
 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i))*log(b*e*x/(d*x + c) + a*e
/(d*x + c)) - 1/12*B^2*(6*(b^2*c^2 - 8*a*b*c*d + 7*a^2*d^2 + 2*(b^2*d^2*x^2
 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a
^2*d^2)*log(d*x + c)^2 - 6*(b^2*c*d - a*b*d^2)*x - 6*(b^2*d^2*x^2 + 2*a*b*d
^2*x + a^2*d^2)*log(b*x + a) + 2*(3*b^2*d^2*x^2 + 6*a*b*d^2*x + 3*a^2*d^2 -
 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a))*log(d*x + c))*log(b*
e*x/(d*x + c) + a*e/(d*x + c))/(a^2*b^3*c^3*g^3*i - 3*a^3*b^2*c^2*d*g^3*i +
```

```
3*a^4*b*c*d^2*g^3*i - a^5*d^3*g^3*i + (b^5*c^3*g^3*i - 3*a*b^4*c^2*d*g^3*i
+ 3*a^2*b^3*c*d^2*g^3*i - a^3*b^2*d^3*g^3*i)*x^2 + 2*(a*b^4*c^3*g^3*i - 3*
a^2*b^3*c^2*d*g^3*i + 3*a^3*b^2*c*d^2*g^3*i - a^4*b*d^3*g^3*i)*x) + (3*b^2*
c^2 - 48*a*b*c*d + 45*a^2*d^2 - 4*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log
(b*x + a)^3 + 4*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(d*x + c)^3 + 18*(
b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a)^2 + 6*(3*b^2*d^2*x^2 + 6*
a*b*d^2*x + 3*a^2*d^2 - 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a
))*log(d*x + c)^2 - 42*(b^2*c*d - a*b*d^2)*x - 42*(b^2*d^2*x^2 + 2*a*b*d^2*
x + a^2*d^2)*log(b*x + a) + 6*(7*b^2*d^2*x^2 + 14*a*b*d^2*x + 7*a^2*d^2 + 2
*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a)^2 - 6*(b^2*d^2*x^2 + 2*
a*b*d^2*x + a^2*d^2)*log(b*x + a))*log(d*x + c))/(a^2*b^3*c^3*g^3*i - 3*a^3
*b^2*c^2*d*g^3*i + 3*a^4*b*c*d^2*g^3*i - a^5*d^3*g^3*i + (b^5*c^3*g^3*i - 3
*a*b^4*c^2*d*g^3*i + 3*a^2*b^3*c*d^2*g^3*i - a^3*b^2*d^3*g^3*i)*x^2 + 2*(a*
b^4*c^3*g^3*i - 3*a^2*b^3*c^2*d*g^3*i + 3*a^3*b^2*c*d^2*g^3*i - a^4*b*d^3*g
^3*i)*x)) + 1/2*A^2*((2*b*d*x - b*c + 3*a*d)/((b^4*c^2 - 2*a*b^3*c*d + a^2*
b^2*d^2)*g^3*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a
^2*b^2*c^2 - 2*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d^2*log(b*x + a)/((b^3*c^3 -
3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i) - 2*d^2*log(d*x + c)/((b^3
*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i)) - 1/2*(b^2*c^2 - 8*
a*b*c*d + 7*a^2*d^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a)^
2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(d*x + c)^2 - 6*(b^2*c*d - a
*b*d^2)*x - 6*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a) + 2*(3*b^2
*d^2*x^2 + 6*a*b*d^2*x + 3*a^2*d^2 - 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2
)*log(b*x + a))*log(d*x + c))*A*B/(a^2*b^3*c^3*g^3*i - 3*a^3*b^2*c^2*d*g^3*
i + 3*a^4*b*c*d^2*g^3*i - a^5*d^3*g^3*i + (b^5*c^3*g^3*i - 3*a*b^4*c^2*d*g^
3*i + 3*a^2*b^3*c*d^2*g^3*i - a^3*b^2*d^3*g^3*i)*x^2 + 2*(a*b^4*c^3*g^3*i -
3*a^2*b^3*c^2*d*g^3*i + 3*a^3*b^2*c*d^2*g^3*i - a^4*b*d^3*g^3*i)*x)
```

mupad [B] time = 8.30, size = 981, normalized size = 2.86

$$\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2\left(\frac{\frac{B^2\,d^2\,\left(\frac{2\,a^2\,d^2-3\,a\,b\,c\,d+b^2\,c^2}{2\,b\,d^3}+\frac{a\,(a\,d-b\,c)}{2\,b\,d^2}\right)}{g^3\,i\,\left(a^3\,d^3-3\,a^2\,b\,c\,d^2+3\,a\,b^2\,c^2\,d-b^3\,c^3\right)}+\frac{B^2\,x\,(a\,d-b\,c)}{g^3\,i\,\left(a^3\,d^3-3\,a^2\,b\,c\,d^2+3\,a\,b^2\,c^2\,d-b^3\,c^3\right)}}{\frac{b\,x^2}{d}+\frac{a^2}{b\,d}+\frac{2\,a\,x}{d}}-\frac{B\,d^2\,(2\,A+}{2\,g^3\,i\,\left(a^3\,d^3-3\,a^2\,b\,c\,d^2+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^3*(c*i + d*i*x)),
x)
```

```
[Out] log((e*(a + b*x))/(c + d*x))^2*(((B^2*d^2*((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d
)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)))/(g^3*i*(a^3*d^3 - b^3*c^3 + 3*a*b
^2*c^2*d - 3*a^2*b*c*d^2)) + (B^2*x*(a*d - b*c))/(g^3*i*(a^3*d^3 - b^3*c^3
+ 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)))/((b*x^2)/d + a^2/(b*d) + (2*a*x)/d) - (B
*d^2*(2*A + 3*B))/(2*g^3*i*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d
^2))) - ((6*A^2*a*d - 2*A^2*b*c + 15*B^2*a*d - B^2*b*c + 14*A*B*a*d - 2*A*B
*b*c)/(2*(a*d - b*c)) + (x*(2*A^2*b*d + 7*B^2*b*d + 6*A*B*b*d))/(a*d - b*c)
)/(x^2*(2*b^3*c*g^3*i - 2*a*b^2*d*g^3*i) + x*(4*a*b^2*c*g^3*i - 4*a^2*b*d*g
^3*i) - 2*a^3*d*g^3*i + 2*a^2*b*c*g^3*i) + (log((e*(a + b*x))/(c + d*x))*((
B*d^2*((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d
^2))*(2*A + 3*B))/(g^3*i*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2
)) - B^2/(b*d*g^3*i*(a*d - b*c)) + (B*x*(2*A + 3*B)*(a*d - b*c))/(g^3*i*(a^
3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))))/((b*x^2)/d + a^2/(b*d)
+ (2*a*x)/d) - (B^2*d^2*log((e*(a + b*x))/(c + d*x))^3)/(3*g^3*i*(a^3*d^3 -
b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (d^2*atan((d^2*(A^2 + (7*B^2)/
2 + 3*A*B)*(2*a^3*d^3*g^3*i + 2*b^3*c^3*g^3*i - 2*a*b^2*c^2*d*g^3*i - 2*a^2
*b*c*d^2*g^3*i)*1i)/(g^3*i*(a*d - b*c)^3*(2*A^2*d^2 + 7*B^2*d^2 + 6*A*B*d^2
)) + (b*d^3*x*(a^2*d^2*g^3*i + b^2*c^2*g^3*i - 2*a*b*c*d*g^3*i)*(A^2 + (7*B
```

```
^2)/2 + 3*A*B)*4i)/(g^3*i*(a*d - b*c)^3*(2*A^2*d^2 + 7*B^2*d^2 + 6*A*B*d^2)
))*(A^2 + (7*B^2)/2 + 3*A*B)*2i)/(g^3*i*(a*d - b*c)^3)
```

sympy [B] time = 14.18, size = 1488, normalized size = 4.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**3/(d*i*x+c*i),x)
```

```
[Out] -B**2*d**2*log(e*(a + b*x)/(c + d*x))**3/(3*a**3*d**3*g**3*i - 9*a**2*b*c*d
**2*g**3*i + 9*a*b**2*c**2*d*g**3*i - 3*b**3*c**3*g**3*i) + d**2*(2*A**2 +
6*A*B + 7*B**2)*log(x + (2*A**2*a*d**3 + 2*A**2*b*c*d**2 + 6*A*B*a*d**3 + 6
*A*B*b*c*d**2 + 7*B**2*a*d**3 + 7*B**2*b*c*d**2 - a**4*d**6*(2*A**2 + 6*A*B
 + 7*B**2)/(a*d - b*c)**3 + 4*a**3*b*c*d**5*(2*A**2 + 6*A*B + 7*B**2)/(a*d
- b*c)**3 - 6*a**2*b**2*c**2*d**4*(2*A**2 + 6*A*B + 7*B**2)/(a*d - b*c)**3
+ 4*a*b**3*c**3*d**3*(2*A**2 + 6*A*B + 7*B**2)/(a*d - b*c)**3 - b**4*c**4*d
**2*(2*A**2 + 6*A*B + 7*B**2)/(a*d - b*c)**3)/(4*A**2*b*d**3 + 12*A*B*b*d**
3 + 14*B**2*b*d**3))/(2*g**3*i*(a*d - b*c)**3) - d**2*(2*A**2 + 6*A*B + 7*B
**2)*log(x + (2*A**2*a*d**3 + 2*A**2*b*c*d**2 + 6*A*B*a*d**3 + 6*A*B*b*c*d*
*2 + 7*B**2*a*d**3 + 7*B**2*b*c*d**2 + a**4*d**6*(2*A**2 + 6*A*B + 7*B**2)/
(a*d - b*c)**3 - 4*a**3*b*c*d**5*(2*A**2 + 6*A*B + 7*B**2)/(a*d - b*c)**3 +
 6*a**2*b**2*c**2*d**4*(2*A**2 + 6*A*B + 7*B**2)/(a*d - b*c)**3 - 4*a*b**3*
c**3*d**3*(2*A**2 + 6*A*B + 7*B**2)/(a*d - b*c)**3 + b**4*c**4*d**2*(2*A**2
 + 6*A*B + 7*B**2)/(a*d - b*c)**3)/(4*A**2*b*d**3 + 12*A*B*b*d**3 + 14*B**2
*b*d**3))/(2*g**3*i*(a*d - b*c)**3) + (6*A*B*a*d - 2*A*B*b*c + 4*A*B*b*d*x
+ 7*B**2*a*d - B**2*b*c + 6*B**2*b*d*x)*log(e*(a + b*x)/(c + d*x))/(2*a**4*
d**2*g**3*i - 4*a**3*b*c*d*g**3*i + 4*a**3*b*d**2*g**3*i*x + 2*a**2*b**2*c*
*2*g**3*i - 8*a**2*b**2*c*d*g**3*i*x + 2*a**2*b**2*d**2*g**3*i*x**2 + 4*a*b
**3*c**2*g**3*i*x - 4*a*b**3*c*d*g**3*i*x**2 + 2*b**4*c**2*g**3*i*x**2) + (
-2*A*B*a**2*d**2 - 4*A*B*a*b*d**2*x - 2*A*B*b**2*d**2*x**2 - 4*B**2*a*b*c*d
 - 4*B**2*a*b*d**2*x + B**2*b**2*c**2 - 2*B**2*b**2*c*d*x - 3*B**2*b**2*d**
2*x**2)*log(e*(a + b*x)/(c + d*x))**2/(2*a**5*d**3*g**3*i - 6*a**4*b*c*d**2
*g**3*i + 4*a**4*b*d**3*g**3*i*x + 6*a**3*b**2*c**2*d*g**3*i - 12*a**3*b**2
*c*d**2*g**3*i*x + 2*a**3*b**2*d**3*g**3*i*x**2 - 2*a**2*b**3*c**3*g**3*i +
 12*a**2*b**3*c**2*d*g**3*i*x - 6*a**2*b**3*c*d**2*g**3*i*x**2 - 4*a*b**4*c
**3*g**3*i*x + 6*a*b**4*c**2*d*g**3*i*x**2 - 2*b**5*c**3*g**3*i*x**2) + (6*
A**2*a*d - 2*A**2*b*c + 14*A*B*a*d - 2*A*B*b*c + 15*B**2*a*d - B**2*b*c + x
*(4*A**2*b*d + 12*A*B*b*d + 14*B**2*b*d))/(4*a**4*d**2*g**3*i - 8*a**3*b*c*
d*g**3*i + 4*a**2*b**2*c**2*g**3*i + x**2*(4*a**2*b**2*d**2*g**3*i - 8*a*b*
*3*c*d*g**3*i + 4*b**4*c**2*g**3*i) + x*(8*a**3*b*d**2*g**3*i - 16*a**2*b**
2*c*d*g**3*i + 8*a*b**3*c**2*g**3*i))
```

3.91 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^4(ci+dix)}\,dx$

Optimal. Leaf size=507

$$-\frac{b^3(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{3g^4i(a+bx)^3(bc-ad)^4}-\frac{2b^3B(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{9g^4i(a+bx)^3(bc-ad)^4}+\frac{3b^2d(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^4i(a+bx)^2(bc-ad)^4}$$

```
[Out] -6*b*B^2*d^2*(d*x+c)/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/4*b^2*B^2*d*(d*x+c)^2/(-a
*d+b*c)^4/g^4/i/(b*x+a)^2-2/27*b^3*B^2*(d*x+c)^3/(-a*d+b*c)^4/g^4/i/(b*x+a)
^3-6*b*B*d^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*x+a)
+3/2*b^2*B*d*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*x+
a)^2-2/9*b^3*B*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^4/i/(b*
x+a)^3-3*b*d^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^4/i/(b*
x+a)+3/2*b^2*d*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^4/i/(
b*x+a)^2-1/3*b^3*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^4/i
/(b*x+a)^3-1/3*d^3*(A+B*ln(e*(b*x+a)/(d*x+c)))^3/B/(-a*d+b*c)^4/g^4/i
```

Rubi [C] time = 8.43, antiderivative size = 2044, normalized size of antiderivative = 4.03, number of steps used = 151, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.738, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^4*(c*i + d*i*x)),
x]
```

```
[Out] (-2*B^2)/(27*(b*c - a*d)*g^4*i*(a + b*x)^3) + (19*B^2*d)/(36*(b*c - a*d)^2*
g^4*i*(a + b*x)^2) - (85*B^2*d^2)/(18*(b*c - a*d)^3*g^4*i*(a + b*x)) - (85*
B^2*d^3*Log[a + b*x])/(18*(b*c - a*d)^4*g^4*i) + (A*B*d^3*Log[a + b*x]^2)/(
(b*c - a*d)^4*g^4*i) + (11*B^2*d^3*Log[a + b*x]^2)/(6*(b*c - a*d)^4*g^4*i)
- (B^2*d^3*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)^4*g^4*i) + (B^2
*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)^
4*g^4*i) + (B^2*d^3*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[(e*(a + b*x))/(c
+ d*x)]^2)/((b*c - a*d)^4*g^4*i) + (B^2*d^3*Log[a + b*x]*Log[(e*(a + b*x))/
(c + d*x)]^2)/((b*c - a*d)^4*g^4*i) - (2*B*(A + B*Log[(e*(a + b*x))/(c + d*
x)]))/(9*(b*c - a*d)*g^4*i*(a + b*x)^3) + (5*B*d*(A + B*Log[(e*(a + b*x))/(
c + d*x)]))/(6*(b*c - a*d)^2*g^4*i*(a + b*x)^2) - (11*B*d^2*(A + B*Log[(e*(
a + b*x))/(c + d*x)]))/(3*(b*c - a*d)^3*g^4*i*(a + b*x)) - (11*B*d^3*Log[a
+ b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*(b*c - a*d)^4*g^4*i) - (A +
 B*Log[(e*(a + b*x))/(c + d*x)])^2/(3*(b*c - a*d)*g^4*i*(a + b*x)^3) + (d*(
A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*(b*c - a*d)^2*g^4*i*(a + b*x)^2)
- (d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^3*g^4*i*(a + b*
x)) - (d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d
)^4*g^4*i) + (85*B^2*d^3*Log[c + d*x])/(18*(b*c - a*d)^4*g^4*i) - (B^2*d^3*
Log[a + b*x]^2*Log[c + d*x])/((b*c - a*d)^4*g^4*i) - (2*A*B*d^3*Log[-((d*(a
 + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^4*g^4*i) - (11*B^2*d^3*Lo
g[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*(b*c - a*d)^4*g^4*i) - (2*
B^2*d^3*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x])/((b*c - a*d)^4*g^4*i
) + (2*B^2*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d
*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*d)^4*g^4*
i) + (11*B*d^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(3*(b*c -
 a*d)^4*g^4*i) + (d^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/
((b*c - a*d)^4*g^4*i) + (A*B*d^3*Log[c + d*x]^2)/((b*c - a*d)^4*g^4*i) + (1
```

```
1*B^2*d^3*Log[c + d*x]^2)/(6*(b*c - a*d)^4*g^4*i) - (B^2*d^3*Log[a + b*x]*L
og[c + d*x]^2)/((b*c - a*d)^4*g^4*i) + (B^2*d^3*Log[(e*(a + b*x))/(c + d*x)
]*Log[c + d*x]^2)/((b*c - a*d)^4*g^4*i) + (B^2*d^3*Log[c + d*x]^3)/(3*(b*c
- a*d)^4*g^4*i) - (2*A*B*d^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(
(b*c - a*d)^4*g^4*i) - (11*B^2*d^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*
d)])/(3*(b*c - a*d)^4*g^4*i) + (B^2*d^3*Log[a + b*x]^2*Log[(b*(c + d*x))/(b
*c - a*d)])/((b*c - a*d)^4*g^4*i) - (2*A*B*d^3*PolyLog[2, -((d*(a + b*x))/(
b*c - a*d))])/((b*c - a*d)^4*g^4*i) - (11*B^2*d^3*PolyLog[2, -((d*(a + b*x)
)/(b*c - a*d))])/(3*(b*c - a*d)^4*g^4*i) + (2*B^2*d^3*Log[a + b*x]*PolyLog[
2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^4*i) - (2*A*B*d^3*PolyLo
g[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*i) - (11*B^2*d^3*PolyLo
g[2, (b*(c + d*x))/(b*c - a*d)])/(3*(b*c - a*d)^4*g^4*i) - (2*B^2*d^3*Log[(
c + d*x)^(-1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*i)
 + (2*B^2*d^3*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c +
d*x)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*i) - (2*B^
2*d^3*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))
])/((b*c - a*d)^4*g^4*i) - (2*B^2*d^3*PolyLog[3, -((d*(a + b*x))/(b*c - a*d
))])/((b*c - a*d)^4*g^4*i) - (2*B^2*d^3*PolyLog[3, (b*(c + d*x))/(b*c - a*d
)])/((b*c - a*d)^4*g^4*i) - (2*B^2*d^3*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b
*x))])/((b*c - a*d)^4*g^4*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
```

```
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

```
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
```

```
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(91c+91dx)(ag+bgx)^4}\,dx = \int\left(\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{91(bc-ad)g^4(a+bx)^4} - \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{91(bc-ad)^2g^4(a+bx)^3} + \cdots\right.$$

$$= -\frac{\left(bd^3\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}\,dx}{91(bc-ad)^4g^4} + \frac{d^4\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}\,dx}{91(bc-ad)^4g^4} + \cdots$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{273(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{182(bc-ad)^2g^4(a+bx)^2} - \cdots$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{273(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{182(bc-ad)^2g^4(a+bx)^2} - \cdots$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{273(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{182(bc-ad)^2g^4(a+bx)^2} - \cdots$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{273(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{182(bc-ad)^2g^4(a+bx)^2} - \cdots$$

$$= -\frac{2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{819(bc-ad)g^4(a+bx)^3} + \frac{5Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{546(bc-ad)^2g^4(a+bx)^2} - \cdots$$

$$= -\frac{2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{819(bc-ad)g^4(a+bx)^3} + \frac{5Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{546(bc-ad)^2g^4(a+bx)^2} - \cdots$$

$$= \frac{B^2d^3\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{91(bc-ad)^4g^4} - \frac{2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{819(bc-ad)g^4(a+bx)^3} + \cdots$$

$$= -\frac{2B^2}{2457(bc-ad)g^4(a+bx)^3} + \frac{19B^2d}{3276(bc-ad)^2g^4(a+bx)^2} - \cdots$$

$$= -\frac{2B^2}{2457(bc-ad)g^4(a+bx)^3} + \frac{19B^2d}{3276(bc-ad)^2g^4(a+bx)^2} - \cdots$$

$$= -\frac{2B^2}{2457(bc-ad)g^4(a+bx)^3} + \frac{19B^2d}{3276(bc-ad)^2g^4(a+bx)^2} - \cdots$$

$$= -\frac{2B^2}{2457(bc-ad)g^4(a+bx)^3} + \frac{19B^2d}{3276(bc-ad)^2g^4(a+bx)^2} - \cdots$$

$$= -\frac{2B^2}{2457(bc-ad)g^4(a+bx)^3} + \frac{19B^2d}{3276(bc-ad)^2g^4(a+bx)^2} - \cdots$$

$$= -\frac{2B^2}{2457(bc-ad)g^4(a+bx)^3} + \frac{19B^2d}{3276(bc-ad)^2g^4(a+bx)^2} - \cdots$$

Mathematica [A] time = 1.46, size = 442, normalized size = 0.87

$$-\frac{18B\left(6a^3Ad^3+18a^2bd^2(Adx+B(c+dx))+9ab^2d\left(2Ad^2x^2+B\left(-c^2+2cdx+3d^2x^2\right)\right)+b^3\left(6Ad^3x^3+B\left(2c^3-\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^4*(c*i + d*
i*x)),x]
```

```
[Out] -1/108*(4*(9*A^2 + 6*A*B + 2*B^2)*(b*c - a*d)^3 - 3*(18*A^2 + 30*A*B + 19*B
^2)*d*(b*c - a*d)^2*(a + b*x) - 6*(18*A^2 + 66*A*B + 85*B^2)*d^2*(-(b*c) +
a*d)*(a + b*x)^2 + 6*(18*A^2 + 66*A*B + 85*B^2)*d^3*(a + b*x)^3*Log[a + b*x
] + 6*B*(b*c - a*d)*(4*(3*A + B)*(b*c - a*d)^2 + 3*(6*A + 5*B)*d*(-(b*c) +
a*d)*(a + b*x) + 6*(6*A + 11*B)*d^2*(a + b*x)^2)*Log[(e*(a + b*x))/(c + d*x
)] + 18*B*(6*a^3*A*d^3 + 18*a^2*b*d^2*(A*d*x + B*(c + d*x)) + 9*a*b^2*d*(2*
A*d^2*x^2 + B*(-c^2 + 2*c*d*x + 3*d^2*x^2)) + b^3*(6*A*d^3*x^3 + B*(2*c^3 -
 3*c^2*d*x + 6*c*d^2*x^2 + 11*d^3*x^3)))*Log[(e*(a + b*x))/(c + d*x)]^2 + 3
6*B^2*d^3*(a + b*x)^3*Log[(e*(a + b*x))/(c + d*x)]^3 - 6*(18*A^2 + 66*A*B +
 85*B^2)*d^3*(a + b*x)^3*Log[c + d*x])/((b*c - a*d)^4*g^4*i*(a + b*x)^3)
```

fricas [A] time = 0.86, size = 940, normalized size = 1.85

$$-\frac{4\left(9A^2+6AB+2B^2\right)b^3c^3-81\left(2A^2+2AB+B^2\right)ab^2c^2d+324\left(A^2+2AB+2B^2\right)a^2bcd^2-\left(198A^2+510A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i),x, algor
ithm="fricas")
```

```
[Out] -1/108*(4*(9*A^2 + 6*A*B + 2*B^2)*b^3*c^3 - 81*(2*A^2 + 2*A*B + B^2)*a*b^2*
c^2*d + 324*(A^2 + 2*A*B + 2*B^2)*a^2*b*c*d^2 - (198*A^2 + 510*A*B + 575*B^
2)*a^3*d^3 + 36*(B^2*b^3*d^3*x^3 + 3*B^2*a*b^2*d^3*x^2 + 3*B^2*a^2*b*d^3*x
+ B^2*a^3*d^3)*log((b*e*x + a*e)/(d*x + c))^3 + 6*((18*A^2 + 66*A*B + 85*B^
2)*b^3*c*d^2 - (18*A^2 + 66*A*B + 85*B^2)*a*b^2*d^3)*x^2 + 18*((6*A*B + 11*
B^2)*b^3*d^3*x^3 + 2*B^2*b^3*c^3 - 9*B^2*a*b^2*c^2*d + 18*B^2*a^2*b*c*d^2 +
 6*A*B*a^3*d^3 + 3*(2*B^2*b^3*c*d^2 + 3*(2*A*B + 3*B^2)*a*b^2*d^3)*x^2 - 3*
(B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2 - 6*(A*B + B^2)*a^2*b*d^3)*x)*log((b*e*x
 + a*e)/(d*x + c))^2 - 3*((18*A^2 + 30*A*B + 19*B^2)*b^3*c^2*d - 54*(2*A^2
+ 6*A*B + 7*B^2)*a*b^2*c*d^2 + (90*A^2 + 294*A*B + 359*B^2)*a^2*b*d^3)*x +
6*((18*A^2 + 66*A*B + 85*B^2)*b^3*d^3*x^3 + 18*A^2*a^3*d^3 + 4*(3*A*B + B^2
)*b^3*c^3 - 27*(2*A*B + B^2)*a*b^2*c^2*d + 108*(A*B + B^2)*a^2*b*c*d^2 + 3*
(2*(6*A*B + 11*B^2)*b^3*c*d^2 + 9*(2*A^2 + 6*A*B + 7*B^2)*a*b^2*d^3)*x^2 -
3*((6*A*B + 5*B^2)*b^3*c^2*d - 18*(2*A*B + 3*B^2)*a*b^2*c*d^2 - 18*(A^2 + 2
*A*B + 2*B^2)*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^7*c^4 - 4*a*b
^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^4*i*x^3 + 3
*(a*b^6*c^4 - 4*a^2*b^5*c^3*d + 6*a^3*b^4*c^2*d^2 - 4*a^4*b^3*c*d^3 + a^5*b
^2*d^4)*g^4*i*x^2 + 3*(a^2*b^5*c^4 - 4*a^3*b^4*c^3*d + 6*a^4*b^3*c^2*d^2 -
4*a^5*b^2*c*d^3 + a^6*b*d^4)*g^4*i*x + (a^3*b^4*c^4 - 4*a^4*b^3*c^3*d + 6*a
^5*b^2*c^2*d^2 - 4*a^6*b*c*d^3 + a^7*d^4)*g^4*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i),x, algor
ithm="giac")
```

[Out] Timed out

maple [B] time = 0.05, size = 3093, normalized size = 6.10

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i),x)
```

```
[Out] 1/3*d^3/i/(a*d-b*c)^5/g^4*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*b*c+d^3/i/(
a*d-b*c)^5/g^4*A^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*c-d^4/i/(a*d-b*c)^5/g^
4*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-d^4/i/(a*d-b*c)^5/g^4*A^2*ln(b/d*
e+(a*d-b*c)/(d*x+c)/d*e)*a-1/3*d^4/i/(a*d-b*c)^5/g^4*B^2*ln(b/d*e+(a*d-b*c)
/(d*x+c)/d*e)^3*a+2/27*e^3/i/(a*d-b*c)^5/g^4*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+
c)*b*c/d*e+b/d*e)^3*c+1/3*e^3/i/(a*d-b*c)^5/g^4*A^2*b^4/(1/(d*x+c)*a*e-1/(d
*x+c)*b*c/d*e+b/d*e)^3*c-3*d*e^2/i/(a*d-b*c)^5/g^4*A*B*b^3/(1/(d*x+c)*a*e-1
/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/3*d*e^3/i/(a*
d-b*c)^5/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*
d-b*c)/(d*x+c)/d*e)*a+3*d^2*e^2/i/(a*d-b*c)^5/g^4*A*B*b^2/(1/(d*x+c)*a*e-1/
(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-6*d^3*e/i/(a*d-b
*c)^5/g^4*A*B*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)*a+6*d^2*e/i/(a*d-b*c)^5/g^4*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b
*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-1/3*d*e^3/i/(a*d-b*c)^5/g^4
*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)^2*a-3/2*d*e^2/i/(a*d-b*c)^5/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*
c/d*e+b/d*e)^2*c+2/3*e^3/i/(a*d-b*c)^5/g^4*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)
*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/9*d*e^3/i/(a*d-b*c)^5
/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(
d*x+c)/d*e)*a-2/9*d*e^3/i/(a*d-b*c)^5/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*
b*c/d*e+b/d*e)^3*a+3*d^2*e/i/(a*d-b*c)^5/g^4*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+
c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-6*d^3*e/i/(a*d-b*c)^5
/g^4*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)*a+6*d^2*e/i/(a*d-b*c)^5/g^4*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*
e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+3/2*d^2*e^2/i/(a*d-b*c)^5/g^4*B^
2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/
d*e)^2*a-3/2*d*e^2/i/(a*d-b*c)^5/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+3/2*d^2*e^2/i/(a*d-b*c)^5/g
^4*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)*a-3/2*d*e^2/i/(a*d-b*c)^5/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*
c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-3/4*d*e^2/i/(a*d-b*c)^5/g^
4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-2/27*d*e^3/i/(a*d-b*c
)^5/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+2/9*e^3/i/(a*d-
b*c)^5/g^4*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c+3/2*d^2*e^2/
i/(a*d-b*c)^5/g^4*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-3/2*d
*e^2/i/(a*d-b*c)^5/g^4*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-
1/3*d*e^3/i/(a*d-b*c)^5/g^4*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^3*a+2/9*e^3/i/(a*d-b*c)^5/g^4*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+d^3/i/(a*d-b*c)^5/g^4*A*B*ln(b/d*e+
(a*d-b*c)/(d*x+c)/d*e)^2*b*c+1/3*e^3/i/(a*d-b*c)^5/g^4*B^2*b^4/(1/(d*x+c)*a
*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-6*d^3*e/i
/(a*d-b*c)^5/g^4*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+6*d^2*e/i/
(a*d-b*c)^5/g^4*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-3*d^3*e/i
/(a*d-b*c)^5/g^4*A^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+3*d^2*e/i/
(a*d-b*c)^5/g^4*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+3/4*d^2*e
^2/i/(a*d-b*c)^5/g^4*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-3*
d^3*e/i/(a*d-b*c)^5/g^4*B^2*b/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+3/2*d^2*e^2/i/(a*d-b*c)^5/g^4*A*B*b^2/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-6*d^3*e/i/(a*d-b*c)^5/g^4*A*B*b/(1/(d
*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+6*d^2*e/i/(a*d-b*c)^5/g^4*A*B*b^2/(1/(
d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c
```

maxima [B] time = 4.37, size = 3434, normalized size = 6.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i),x, algor
ithm="maxima")
```

```
[Out] -1/6*B^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d
- 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*
g^4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)
*g^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3
)*g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3)*g^4*i
) + 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^
3*b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d
+ 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i))*log(b*e*x/(d*x + c)
+ a*e/(d*x + c))^2 - 1/3*A*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a
^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c
*d^2 - a^3*b^3*d^3)*g^4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*
c*d^2 - a^4*b^2*d^3)*g^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b
^2*c*d^2 - a^5*b*d^3)*g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*
d^2 - a^6*d^3)*g^4*i) + 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^
2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*
c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i))*
log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 1/108*B^2*(6*(4*b^3*c^3 - 27*a*b^2*c
^2*d + 108*a^2*b*c*d^2 - 85*a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(
b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 1
8*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^2
- 3*(5*b^3*c^2*d - 54*a*b^2*c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a
*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a) - 6*(11*b^3*d^3*x^3 +
33*a*b^2*d^3*x^2 + 33*a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d
^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a))*log(d*x + c))*log(b*e*x/(d*
x + c) + a*e/(d*x + c))/(a^3*b^4*c^4*g^4*i - 4*a^4*b^3*c^3*d*g^4*i + 6*a^5*
b^2*c^2*d^2*g^4*i - 4*a^6*b*c*d^3*g^4*i + a^7*d^4*g^4*i + (b^7*c^4*g^4*i -
4*a*b^6*c^3*d*g^4*i + 6*a^2*b^5*c^2*d^2*g^4*i - 4*a^3*b^4*c*d^3*g^4*i + a^4
*b^3*d^4*g^4*i)*x^3 + 3*(a*b^6*c^4*g^4*i - 4*a^2*b^5*c^3*d*g^4*i + 6*a^3*b^
4*c^2*d^2*g^4*i - 4*a^4*b^3*c*d^3*g^4*i + a^5*b^2*d^4*g^4*i)*x^2 + 3*(a^2*b
^5*c^4*g^4*i - 4*a^3*b^4*c^3*d*g^4*i + 6*a^4*b^3*c^2*d^2*g^4*i - 4*a^5*b^2*
c*d^3*g^4*i + a^6*b*d^4*g^4*i)*x) + (8*b^3*c^3 - 81*a*b^2*c^2*d + 648*a^2*b
*c*d^2 - 575*a^3*d^3 + 36*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x +
a^3*d^3)*log(b*x + a)^3 - 36*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x
 + a^3*d^3)*log(d*x + c)^3 + 510*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 198*(b^3*d^3
*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 18*(11*b
^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^
3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a))*log(d*x + c)^2
 - 3*(19*b^3*c^2*d - 378*a*b^2*c*d^2 + 359*a^2*b*d^3)*x + 510*(b^3*d^3*x^3
+ 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a) - 6*(85*b^3*d^3*x
^3 + 255*a*b^2*d^3*x^2 + 255*a^2*b*d^3*x + 85*a^3*d^3 + 18*(b^3*d^3*x^3 + 3
*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 66*(b^3*d^3*x^3
+ 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a))*log(d*x + c))/(a
^3*b^4*c^4*g^4*i - 4*a^4*b^3*c^3*d*g^4*i + 6*a^5*b^2*c^2*d^2*g^4*i - 4*a^6*
b*c*d^3*g^4*i + a^7*d^4*g^4*i + (b^7*c^4*g^4*i - 4*a*b^6*c^3*d*g^4*i + 6*a^
2*b^5*c^2*d^2*g^4*i - 4*a^3*b^4*c*d^3*g^4*i + a^4*b^3*d^4*g^4*i)*x^3 + 3*(a
*b^6*c^4*g^4*i - 4*a^2*b^5*c^3*d*g^4*i + 6*a^3*b^4*c^2*d^2*g^4*i - 4*a^4*b^
3*c*d^3*g^4*i + a^5*b^2*d^4*g^4*i)*x^2 + 3*(a^2*b^5*c^4*g^4*i - 4*a^3*b^4*c
^3*d*g^4*i + 6*a^4*b^3*c^2*d^2*g^4*i - 4*a^5*b^2*c*d^3*g^4*i + a^6*b*d^4*g^
4*i)*x)) - 1/6*A^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3
*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3
*b^3*d^3)*g^4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^
```

```
4*b^2*d^3)*g^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 -
 a^5*b*d^3)*g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*
d^3)*g^4*i) + 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*
d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*
b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i)) - 1/18*(4*
b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 - 85*a^3*d^3 + 66*(b^3*c*d^2 - a
*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3
)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*
d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*b^2*c*d^2 + 49*a^2*b*d^3)*x + 6
6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a) -
6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3
*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a))*log(d*x
 + c))*A*B/(a^3*b^4*c^4*g^4*i - 4*a^4*b^3*c^3*d*g^4*i + 6*a^5*b^2*c^2*d^2*g
^4*i - 4*a^6*b*c*d^3*g^4*i + a^7*d^4*g^4*i + (b^7*c^4*g^4*i - 4*a*b^6*c^3*d
*g^4*i + 6*a^2*b^5*c^2*d^2*g^4*i - 4*a^3*b^4*c*d^3*g^4*i + a^4*b^3*d^4*g^4*
i)*x^3 + 3*(a*b^6*c^4*g^4*i - 4*a^2*b^5*c^3*d*g^4*i + 6*a^3*b^4*c^2*d^2*g^4
*i - 4*a^4*b^3*c*d^3*g^4*i + a^5*b^2*d^4*g^4*i)*x^2 + 3*(a^2*b^5*c^4*g^4*i
- 4*a^3*b^4*c^3*d*g^4*i + 6*a^4*b^3*c^2*d^2*g^4*i - 4*a^5*b^2*c*d^3*g^4*i +
 a^6*b*d^4*g^4*i)*x)
```

mupad [B] time = 11.45, size = 1882, normalized size = 3.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^4*(c*i + d*i*x)),
x)
```

```
[Out] log((e*(a + b*x))/(c + d*x))^2*(((B^2*d^3*(a*((3*a^2*d^2 + b^2*c^2 - 4*a*b*
c*d)/(6*b*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^3*d^3 - b^3*c^3 + 4*a*b^
2*c^2*d - 6*a^2*b*c*d^2)/(3*b*d^4)))/(g^4*i*(a^4*d^4 + b^4*c^4 + 6*a^2*b^2*
c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3)) - (B^2*d^3*x^2*((b^2*c - a*b*d)/(
3*d^2) - (2*b*(a*d - b*c))/(3*d^2)))/(g^4*i*(a^4*d^4 + b^4*c^4 + 6*a^2*b^2*
c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3)) + (B^2*d^3*x*(b*((3*a^2*d^2 + b^2
*c^2 - 4*a*b*c*d)/(6*b*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^2*d^2 + b^2
*c^2 - 4*a*b*c*d)/(3*d^3) + (2*a*(a*d - b*c))/(3*d^2)))/(g^4*i*(a^4*d^4 + b
^4*c^4 + 6*a^2*b^2*c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3)))/((3*a^2*x)/d
+ a^3/(b*d) + (b^2*x^3)/d + (3*a*b*x^2)/d) - (d^3*(11*B^2 + 6*A*B))/(6*g^4*
i*(a^4*d^4 + b^4*c^4 + 6*a^2*b^2*c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3)))
 + ((198*A^2*a^2*d^2 + 36*A^2*b^2*c^2 + 575*B^2*a^2*d^2 + 8*B^2*b^2*c^2 + 5
10*A*B*a^2*d^2 + 24*A*B*b^2*c^2 - 126*A^2*a*b*c*d - 73*B^2*a*b*c*d - 138*A*
B*a*b*c*d)/(6*(a*d - b*c)) + (x*(90*A^2*a*b*d^2 + 359*B^2*a*b*d^2 - 18*A^2*
b^2*c*d - 19*B^2*b^2*c*d + 294*A*B*a*b*d^2 - 30*A*B*b^2*c*d))/(2*(a*d - b*c
)) + (d*x^2*(18*A^2*b^2*d + 85*B^2*b^2*d + 66*A*B*b^2*d))/(a*d - b*c))/(x*(
54*a^4*b*d^2*g^4*i + 54*a^2*b^3*c^2*g^4*i - 108*a^3*b^2*c*d*g^4*i) + x^2*(5
4*a*b^4*c^2*g^4*i + 54*a^3*b^2*d^2*g^4*i - 108*a^2*b^3*c*d*g^4*i) + x^3*(18
*b^5*c^2*g^4*i + 18*a^2*b^3*d^2*g^4*i - 36*a*b^4*c*d*g^4*i) + 18*a^5*d^2*g^
4*i + 18*a^3*b^2*c^2*g^4*i - 36*a^4*b*c*d*g^4*i) - (log((e*(a + b*x))/(c +
d*x))*(x*(B^2/(g^4*i*(a*d - b*c)^2) - (d^3*(11*B^2 + 6*A*B)*(b*((3*a^2*d^2
+ b^2*c^2 - 4*a*b*c*d)/(6*b*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^2*d^2
+ b^2*c^2 - 4*a*b*c*d)/(3*d^3) + (2*a*(a*d - b*c))/(3*d^2)))/(3*g^4*i*(a^4*
d^4 + b^4*c^4 + 6*a^2*b^2*c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3))) + (5*B
^2*a*d - 3*B^2*b*c)/(3*b*d*g^4*i*(a*d - b*c)^2) + (B^2*a)/(3*b*g^4*i*(a*d -
 b*c)^2) - (d^3*(11*B^2 + 6*A*B)*(a*((3*a^2*d^2 + b^2*c^2 - 4*a*b*c*d)/(6*b
*d^3) + (a*(a*d - b*c))/(3*b*d^2)) + (3*a^3*d^3 - b^3*c^3 + 4*a*b^2*c^2*d -
 6*a^2*b*c*d^2)/(3*b*d^4)))/(3*g^4*i*(a^4*d^4 + b^4*c^4 + 6*a^2*b^2*c^2*d^2
 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3)) + (d^3*x^2*((b^2*c - a*b*d)/(3*d^2) - (2
*b*(a*d - b*c))/(3*d^2))*(11*B^2 + 6*A*B))/(3*g^4*i*(a^4*d^4 + b^4*c^4 + 6*
a^2*b^2*c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*c*d^3))))/((3*a^2*x)/d + a^3/(b*d
) + (b^2*x^3)/d + (3*a*b*x^2)/d) - (B^2*d^3*log((e*(a + b*x))/(c + d*x))^3)
```

```
/(3*g^4*i*(a^4*d^4 + b^4*c^4 + 6*a^2*b^2*c^2*d^2 - 4*a*b^3*c^3*d - 4*a^3*b*
c*d^3)) + (d^3*atan((d^3*(A^2 + (85*B^2)/18 + (11*A*B)/3)*(18*a^4*d^4*g^4*i
 - 18*b^4*c^4*g^4*i + 36*a*b^3*c^3*d*g^4*i - 36*a^3*b*c*d^3*g^4*i)*1i)/(g^4
*i*(a*d - b*c)^4*(18*A^2*d^3 + 85*B^2*d^3 + 66*A*B*d^3)) + (b*d^4*x*(A^2 +
(85*B^2)/18 + (11*A*B)/3)*(a^3*d^3*g^4*i - b^3*c^3*g^4*i + 3*a*b^2*c^2*d*g^
4*i - 3*a^2*b*c*d^2*g^4*i)*36i)/(g^4*i*(a*d - b*c)^4*(18*A^2*d^3 + 85*B^2*d
^3 + 66*A*B*d^3)))*(A^2 + (85*B^2)/18 + (11*A*B)/3)*2i)/(g^4*i*(a*d - b*c)^
4)
```

sympy [B] time = 55.10, size = 2388, normalized size = 4.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**4/(d*i*x+c*i),x)
```

```
[Out] -B**2*d**3*log(e*(a + b*x)/(c + d*x))**3/(3*a**4*d**4*g**4*i - 12*a**3*b*c*
d**3*g**4*i + 18*a**2*b**2*c**2*d**2*g**4*i - 12*a*b**3*c**3*d*g**4*i + 3*b
**4*c**4*g**4*i) + d**3*(18*A**2 + 66*A*B + 85*B**2)*log(x + (18*A**2*a*d**
4 + 18*A**2*b*c*d**3 + 66*A*B*a*d**4 + 66*A*B*b*c*d**3 + 85*B**2*a*d**4 + 8
5*B**2*b*c*d**3 - a**5*d**8*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 + 5
*a**4*b*c*d**7*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 - 10*a**3*b**2*c
**2*d**6*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 + 10*a**2*b**3*c**3*d*
*5*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 - 5*a*b**4*c**4*d**4*(18*A**
2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 + b**5*c**5*d**3*(18*A**2 + 66*A*B + 8
5*B**2)/(a*d - b*c)**4)/(36*A**2*b*d**4 + 132*A*B*b*d**4 + 170*B**2*b*d**4)
)/(18*g**4*i*(a*d - b*c)**4) - d**3*(18*A**2 + 66*A*B + 85*B**2)*log(x + (1
8*A**2*a*d**4 + 18*A**2*b*c*d**3 + 66*A*B*a*d**4 + 66*A*B*b*c*d**3 + 85*B**
2*a*d**4 + 85*B**2*b*c*d**3 + a**5*d**8*(18*A**2 + 66*A*B + 85*B**2)/(a*d -
 b*c)**4 - 5*a**4*b*c*d**7*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 + 10
*a**3*b**2*c**2*d**6*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 - 10*a**2*
b**3*c**3*d**5*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 + 5*a*b**4*c**4*
d**4*(18*A**2 + 66*A*B + 85*B**2)/(a*d - b*c)**4 - b**5*c**5*d**3*(18*A**2
+ 66*A*B + 85*B**2)/(a*d - b*c)**4)/(36*A**2*b*d**4 + 132*A*B*b*d**4 + 170*
B**2*b*d**4))/(18*g**4*i*(a*d - b*c)**4) + (66*A*B*a**2*d**2 - 42*A*B*a*b*c
*d + 90*A*B*a*b*d**2*x + 12*A*B*b**2*c**2 - 18*A*B*b**2*c*d*x + 36*A*B*b**2
*d**2*x**2 + 85*B**2*a**2*d**2 - 23*B**2*a*b*c*d + 147*B**2*a*b*d**2*x + 4*
B**2*b**2*c**2 - 15*B**2*b**2*c*d*x + 66*B**2*b**2*d**2*x**2)*log(e*(a + b*
x)/(c + d*x))/(18*a**6*d**3*g**4*i - 54*a**5*b*c*d**2*g**4*i + 54*a**5*b*d*
*3*g**4*i*x + 54*a**4*b**2*c**2*d*g**4*i - 162*a**4*b**2*c*d**2*g**4*i*x +
54*a**4*b**2*d**3*g**4*i*x**2 - 18*a**3*b**3*c**3*g**4*i + 162*a**3*b**3*c*
*2*d*g**4*i*x - 162*a**3*b**3*c*d**2*g**4*i*x**2 + 18*a**3*b**3*d**3*g**4*i
*x**3 - 54*a**2*b**4*c**3*g**4*i*x + 162*a**2*b**4*c**2*d*g**4*i*x**2 - 54*
a**2*b**4*c*d**2*g**4*i*x**3 - 54*a*b**5*c**3*g**4*i*x**2 + 54*a*b**5*c**2*
d*g**4*i*x**3 - 18*b**6*c**3*g**4*i*x**3) + (-6*A*B*a**3*d**3 - 18*A*B*a**2
*b*d**3*x - 18*A*B*a*b**2*d**3*x**2 - 6*A*B*b**3*d**3*x**3 - 18*B**2*a**2*b
*c*d**2 - 18*B**2*a**2*b*d**3*x + 9*B**2*a*b**2*c**2*d - 18*B**2*a*b**2*c*d
**2*x - 27*B**2*a*b**2*d**3*x**2 - 2*B**2*b**3*c**3 + 3*B**2*b**3*c**2*d*x
- 6*B**2*b**3*c*d**2*x**2 - 11*B**2*b**3*d**3*x**3)*log(e*(a + b*x)/(c + d*
x))**2/(6*a**7*d**4*g**4*i - 24*a**6*b*c*d**3*g**4*i + 18*a**6*b*d**4*g**4*
i*x + 36*a**5*b**2*c**2*d**2*g**4*i - 72*a**5*b**2*c*d**3*g**4*i*x + 18*a**
5*b**2*d**4*g**4*i*x**2 - 24*a**4*b**3*c**3*d*g**4*i + 108*a**4*b**3*c**2*d
**2*g**4*i*x - 72*a**4*b**3*c*d**3*g**4*i*x**2 + 6*a**4*b**3*d**4*g**4*i*x*
*3 + 6*a**3*b**4*c**4*g**4*i - 72*a**3*b**4*c**3*d*g**4*i*x + 108*a**3*b**4
*c**2*d**2*g**4*i*x**2 - 24*a**3*b**4*c*d**3*g**4*i*x**3 + 18*a**2*b**5*c**
4*g**4*i*x - 72*a**2*b**5*c**3*d*g**4*i*x**2 + 36*a**2*b**5*c**2*d**2*g**4*
i*x**3 + 18*a*b**6*c**4*g**4*i*x**2 - 24*a*b**6*c**3*d*g**4*i*x**3 + 6*b**7
*c**4*g**4*i*x**3) + (198*A**2*a**2*d**2 - 126*A**2*a*b*c*d + 36*A**2*b**2*
c**2 + 510*A*B*a**2*d**2 - 138*A*B*a*b*c*d + 24*A*B*b**2*c**2 + 575*B**2*a*
*2*d**2 - 73*B**2*a*b*c*d + 8*B**2*b**2*c**2 + x**2*(108*A**2*b**2*d**2 + 3
```

```
96*A*B*b**2*d**2 + 510*B**2*b**2*d**2) + x*(270*A**2*a*b*d**2 - 54*A**2*b**
2*c*d + 882*A*B*a*b*d**2 - 90*A*B*b**2*c*d + 1077*B**2*a*b*d**2 - 57*B**2*b
**2*c*d))/(108*a**6*d**3*g**4*i - 324*a**5*b*c*d**2*g**4*i + 324*a**4*b**2*
c**2*d*g**4*i - 108*a**3*b**3*c**3*g**4*i + x**3*(108*a**3*b**3*d**3*g**4*i
 - 324*a**2*b**4*c*d**2*g**4*i + 324*a*b**5*c**2*d*g**4*i - 108*b**6*c**3*g
**4*i) + x**2*(324*a**4*b**2*d**3*g**4*i - 972*a**3*b**3*c*d**2*g**4*i + 97
2*a**2*b**4*c**2*d*g**4*i - 324*a*b**5*c**3*g**4*i) + x*(324*a**5*b*d**3*g*
*4*i - 972*a**4*b**2*c*d**2*g**4*i + 972*a**3*b**3*c**2*d*g**4*i - 324*a**2
*b**4*c**3*g**4*i))
```

3.92 $\int \frac{(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dix)^2} dx$

Optimal. Leaf size=722

$$\frac{b^3g^3(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2d^4i^2}-\frac{6bBg^3(bc-ad)^2\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^4i^2}-\frac{3bg^3(bc-ad)^2\log\left(\frac{bc-}{b(c+}\right.}{}$$

```
[Out] 2*A*B*(-a*d+b*c)^2*g^3*(b*x+a)/d^3/i^2/(d*x+c)-2*B^2*(-a*d+b*c)^2*g^3*(b*x+
a)/d^3/i^2/(d*x+c)+2*B^2*(-a*d+b*c)^2*g^3*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/d^3
/i^2/(d*x+c)-b*B*(-a*d+b*c)*g^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^3/i^2
-6*b*B*(-a*d+b*c)^2*g^3*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c))
)/d^4/i^2-3*b*(-a*d+b*c)*g^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^3/i^2-
(-a*d+b*c)^2*g^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^3/i^2/(d*x+c)+1/2*
b^3*g^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^4/i^2-3*b*(-a*d+b*c)^2*g^
3*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^4/i^2+b*B^2*(-a*
d+b*c)^2*g^3*ln(d*x+c)/d^4/i^2+b*B*(-a*d+b*c)^2*g^3*(A+B*ln(e*(b*x+a)/(d*x+
c)))*ln(1-b*(d*x+c)/d/(b*x+a))/d^4/i^2-6*b*B^2*(-a*d+b*c)^2*g^3*polylog(2,d
*(b*x+a)/b/(d*x+c))/d^4/i^2-6*b*B*(-a*d+b*c)^2*g^3*(A+B*ln(e*(b*x+a)/(d*x+c
)))*polylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i^2-b*B^2*(-a*d+b*c)^2*g^3*polylog(2
,b*(d*x+c)/d/(b*x+a))/d^4/i^2+6*b*B^2*(-a*d+b*c)^2*g^3*polylog(3,d*(b*x+a)/
b/(d*x+c))/d^4/i^2
```

Rubi [B] time = 6.15, antiderivative size = 2224, normalized size of antiderivative = 3.08, number of steps used = 119, number of rules used = 28, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^
2,x]
```

```
[Out] -((A*b^2*B*(b*c - a*d)*g^3*x)/(d^3*i^2)) + (2*B^2*(b*c - a*d)^3*g^3)/(d^4*i
^2*(c + d*x)) + (2*b*B^2*(b*c - a*d)^2*g^3*Log[a + b*x])/(d^4*i^2) + (a^2*b
*B^2*g^3*Log[a + b*x]^2)/(2*d^2*i^2) + (a*b*B^2*(2*b*c - 3*a*d)*g^3*Log[a +
 b*x]^2)/(d^3*i^2) + (b*B^2*(b*c - a*d)^2*g^3*Log[a + b*x]^2)/(d^4*i^2) - (
3*b*B^2*(b*c - a*d)^2*g^3*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/(d^4*i^2) + (
3*b*B^2*(b*c - a*d)^2*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(
-1)]^2)/(d^4*i^2) - (b*B^2*(b*c - a*d)*g^3*(a + b*x)*Log[(e*(a + b*x))/(c +
 d*x)])/(d^3*i^2) - (2*B*(b*c - a*d)^3*g^3*(A + B*Log[(e*(a + b*x))/(c + d*
x)]))/(d^4*i^2*(c + d*x)) - (a^2*b*B*g^3*Log[a + b*x]*(A + B*Log[(e*(a + b*
x))/(c + d*x)]))/(d^2*i^2) - (2*a*b*B*(2*b*c - 3*a*d)*g^3*Log[a + b*x]*(A +
 B*Log[(e*(a + b*x))/(c + d*x)]))/(d^3*i^2) - (2*b*B*(b*c - a*d)^2*g^3*Log[
a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^4*i^2) - (b^2*(2*b*c - 3*
a*d)*g^3*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(d^3*i^2) + (b^3*g^3*x^2
*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*d^2*i^2) + ((b*c - a*d)^3*g^3*(
A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(d^4*i^2*(c + d*x)) - (b*B^2*(b*c -
a*d)^2*g^3*Log[c + d*x])/(d^4*i^2) - (3*b*B^2*(b*c - a*d)^2*g^3*Log[a + b*x
]^2*Log[c + d*x])/(d^4*i^2) - (b^3*B^2*c^2*g^3*Log[-((d*(a + b*x))/(b*c - a
*d))]*Log[c + d*x])/(d^4*i^2) - (2*b^2*B^2*c*(2*b*c - 3*a*d)*g^3*Log[-((d*(
a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4*i^2) - (6*A*b*B*(b*c - a*d)^2*g^
3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4*i^2) - (2*b*B^2*(b*c
 - a*d)^2*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4*i^2) - (
6*b*B^2*(b*c - a*d)^2*g^3*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x])/(d
^4*i^2) + (6*b*B^2*(b*c - a*d)^2*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log
```

```
[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x
])/(d^4*i^2) + (b^3*B*c^2*g^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c +
d*x])/(d^4*i^2) + (2*b^2*B*c*(2*b*c - 3*a*d)*g^3*(A + B*Log[(e*(a + b*x))/(
c + d*x)])*Log[c + d*x])/(d^4*i^2) + (2*b*B*(b*c - a*d)^2*g^3*(A + B*Log[(e
*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d^4*i^2) + (3*b*(b*c - a*d)^2*g^3*(A
 + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/(d^4*i^2) + (b^3*B^2*c^2
*g^3*Log[c + d*x]^2)/(2*d^4*i^2) + (b^2*B^2*c*(2*b*c - 3*a*d)*g^3*Log[c + d
*x]^2)/(d^4*i^2) + (3*A*b*B*(b*c - a*d)^2*g^3*Log[c + d*x]^2)/(d^4*i^2) + (
b*B^2*(b*c - a*d)^2*g^3*Log[c + d*x]^2)/(d^4*i^2) - (3*b*B^2*(b*c - a*d)^2*
g^3*Log[a + b*x]*Log[c + d*x]^2)/(d^4*i^2) + (3*b*B^2*(b*c - a*d)^2*g^3*Log
[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/(d^4*i^2) + (b*B^2*(b*c - a*d)^2*
g^3*Log[c + d*x]^3)/(d^4*i^2) - (a^2*b*B^2*g^3*Log[a + b*x]*Log[(b*(c + d*x
))/(b*c - a*d)])/(d^2*i^2) - (2*a*b*B^2*(2*b*c - 3*a*d)*g^3*Log[a + b*x]*Lo
g[(b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) - (2*b*B^2*(b*c - a*d)^2*g^3*Log[a
+ b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4*i^2) + (3*b*B^2*(b*c - a*d)^2*g
^3*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4*i^2) - (a^2*b*B^2*g^
3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*i^2) - (2*a*b*B^2*(2*b*c -
 3*a*d)*g^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i^2) - (2*b*B^2*
(b*c - a*d)^2*g^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^4*i^2) + (6*
b*B^2*(b*c - a*d)^2*g^3*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d)
)])/(d^4*i^2) - (b^3*B^2*c^2*g^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^
4*i^2) - (2*b^2*B^2*c*(2*b*c - 3*a*d)*g^3*PolyLog[2, (b*(c + d*x))/(b*c - a
*d)])/(d^4*i^2) - (6*A*b*B*(b*c - a*d)^2*g^3*PolyLog[2, (b*(c + d*x))/(b*c
- a*d)])/(d^4*i^2) - (2*b*B^2*(b*c - a*d)^2*g^3*PolyLog[2, (b*(c + d*x))/(b
*c - a*d)])/(d^4*i^2) - (6*b*B^2*(b*c - a*d)^2*g^3*Log[(c + d*x)^(-1)]*Poly
Log[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^2) + (6*b*B^2*(b*c - a*d)^2*g^3*(
Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[
2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^2) - (6*b*B^2*(b*c - a*d)^2*g^3*PolyL
og[3, -((d*(a + b*x))/(b*c - a*d))])/(d^4*i^2) - (6*b*B^2*(b*c - a*d)^2*g^3
*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
```

```
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(92c+92dx)^2}\,dx = \int\left(-\frac{b^2(2bc-3ad)g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8464d^3} + \frac{b^3g^3x\left(A+B\log\left(\right.\right.}{8464d^2}\right.$$

$$= \frac{\left(b^3g^3\right)\int x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx}{8464d^2} - \frac{\left(b^2(2bc-3ad)g^3\right)\int\left(A+B\right.}{8464d^3}$$

$$= -\frac{b^2(2bc-3ad)g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8464d^3} + \frac{b^3g^3x^2\left(A+B\log\left(\right.\right.}{16928d^2}$$

$$= -\frac{b^2(2bc-3ad)g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8464d^3} + \frac{b^3g^3x^2\left(A+B\log\left(\right.\right.}{16928d^2}$$

$$= -\frac{b^2(2bc-3ad)g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8464d^3} + \frac{b^3g^3x^2\left(A+B\log\left(\right.\right.}{16928d^2}$$

$$= -\frac{b^2(2bc-3ad)g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8464d^3} + \frac{b^3g^3x^2\left(A+B\log\left(\right.\right.}{16928d^2}$$

$$= -\frac{Ab^2B(bc-ad)g^3x}{8464d^3} - \frac{B(bc-ad)^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4232d^4(c+dx)} - \frac{a^2bB}{}$$

$$= -\frac{Ab^2B(bc-ad)g^3x}{8464d^3} - \frac{bB^2(bc-ad)g^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{8464d^3} - \frac{B(bc}{}$$

$$= -\frac{Ab^2B(bc-ad)g^3x}{8464d^3} - \frac{bB^2(bc-ad)g^3(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{8464d^3} - \frac{B(bc}{}$$

$$= -\frac{Ab^2B(bc-ad)g^3x}{8464d^3} + \frac{B^2(bc-ad)^3g^3}{4232d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3\log(a+b}{4232d^4}$$

$$= -\frac{Ab^2B(bc-ad)g^3x}{8464d^3} + \frac{B^2(bc-ad)^3g^3}{4232d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3\log(a+b}{4232d^4}$$

$$= -\frac{Ab^2B(bc-ad)g^3x}{8464d^3} + \frac{B^2(bc-ad)^3g^3}{4232d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3\log(a+b}{4232d^4}$$

$$= -\frac{Ab^2B(bc-ad)g^3x}{8464d^3} + \frac{B^2(bc-ad)^3g^3}{4232d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3\log(a+b}{4232d^4}$$

$$= -\frac{Ab^2B(bc-ad)g^3x}{8464d^3} + \frac{B^2(bc-ad)^3g^3}{4232d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3\log(a+b}{4232d^4}$$

$$= -\frac{Ab^2B(bc-ad)g^3x}{8464d^3} + \frac{B^2(bc-ad)^3g^3}{4232d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3\log(a+b}{4232d^4}$$

$$= -\frac{Ab^2B(bc-ad)g^3x}{8464d^3} + \frac{B^2(bc-ad)^3g^3}{4232d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3\log(a+b}{4232d^4}$$

Mathematica [B] time = 7.41, size = 5193, normalized size = 7.19

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d
*i*x)^2,x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{A^2b^3g^3x^3 + 3\,A^2ab^2g^3x^2 + 3\,A^2a^2bg^3x + A^2a^3g^3 + \left(B^2b^3g^3x^3 + 3\,B^2ab^2g^3x^2 + 3\,B^2a^2bg^3x + B^2a^3g^3\right)\mathrm{l}}{d^2i^2x^2 + 2\,cdi^2x + c^2i}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, alg
orithm="fricas")
```

```
[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a
^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a
^3*g^3)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^3*g^3*x^3 + 3*A*B*a*b^2*g
^3*x^2 + 3*A*B*a^2*b*g^3*x + A*B*a^3*g^3)*log((b*e*x + a*e)/(d*x + c)))/(d^
2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.18, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^3 \left(B\ln\left(\frac{(bx+a)e}{dx+c}\right) + A\right)^2}{(dix + ci)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2,x)
```

```
[Out] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, alg
orithm="maxima")
```

```
[Out] 1/2*(2*c^3/(d^5*i^2*x + c*d^4*i^2) + 6*c^2*log(d*x + c)/(d^4*i^2) + (d*x^2
- 4*c*x)/(d^3*i^2))*A^2*b^3*g^3 - 3*A^2*a*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2)
- x/(d^2*i^2) + 2*c*log(d*x + c)/(d^3*i^2))*g^3 + 3*A^2*a^2*b*g^3*(c/(d^3*i
```

```
^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - 2*A*B*a^3*g^3*(log(b*e*x/(d*x
 + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d*i^2) - 1/(d^2*i^2*x + c*d*i^2) - b*
log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*log(d*x + c)/((b*c*d - a*d^2)*i^2))
- A^2*a^3*g^3/(d^2*i^2*x + c*d*i^2) + 1/2*(2*((b^3*c^2*d*g^3 - 2*a*b^2*c*d^
2*g^3 + a^2*b*d^3*g^3)*B^2*x + (b^3*c^3*g^3 - 2*a*b^2*c^2*d*g^3 + a^2*b*c*d
^2*g^3)*B^2)*log(d*x + c)^3 + (B^2*b^3*d^3*g^3*x^3 - 3*(b^3*c*d^2*g^3 - 2*a
*b^2*d^3*g^3)*B^2*x^2 - 2*(2*b^3*c^2*d*g^3 - 3*a*b^2*c*d^2*g^3)*B^2*x + 2*(
b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 - a^3*d^3*g^3)*B^2)*log
(d*x + c)^2)/(d^5*i^2*x + c*d^4*i^2) - integrate(-(B^2*a^3*d^3*g^3*log(e)^2
 + (B^2*b^3*d^3*g^3*log(e)^2 + 2*A*B*b^3*d^3*g^3*log(e))*x^3 + 3*(B^2*a*b^2
*d^3*g^3*log(e)^2 + 2*A*B*a*b^2*d^3*g^3*log(e))*x^2 + (B^2*b^3*d^3*g^3*x^3
+ 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*log(b*
x + a)^2 + 3*(B^2*a^2*b*d^3*g^3*log(e)^2 + 2*A*B*a^2*b*d^3*g^3*log(e))*x +
2*(B^2*a^3*d^3*g^3*log(e) + (B^2*b^3*d^3*g^3*log(e) + A*B*b^3*d^3*g^3)*x^3
+ 3*(B^2*a*b^2*d^3*g^3*log(e) + A*B*a*b^2*d^3*g^3)*x^2 + 3*(B^2*a^2*b*d^3*g
^3*log(e) + A*B*a^2*b*d^3*g^3)*x)*log(b*x + a) - ((2*A*B*b^3*d^3*g^3 + (2*g
^3*log(e) + g^3)*B^2*b^3*d^3)*x^3 + 2*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*
a^2*b*c*d^2*g^3 + (g^3*log(e) - g^3)*a^3*d^3)*B^2 + 3*(2*A*B*a*b^2*d^3*g^3
- (b^3*c*d^2*g^3 - 2*(g^3*log(e) + g^3)*a*b^2*d^3)*B^2)*x^2 + 2*(3*A*B*a^2*
b*d^3*g^3 + (3*a^2*b*d^3*g^3*log(e) - 2*b^3*c^2*d*g^3 + 3*a*b^2*c*d^2*g^3)*
B^2)*x + 2*(B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3
*g^3*x + B^2*a^3*d^3*g^3)*log(b*x + a))*log(d*x + c))/(d^5*i^2*x^2 + 2*c*d^
4*i^2*x + c^2*d^3*i^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)^3\,\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)^2}{\left(c\,i+d\,i\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^
2,x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.93 $\int \frac{(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dix)^2}\,dx$

Optimal. Leaf size=469

$$\frac{4bBg^2(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^3i^2}+\frac{2bg^2(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{d^3i^2}+\frac{2bBg^2(bc-}{}$$

```
[Out] -2*A*B*(-a*d+b*c)*g^2*(b*x+a)/d^2/i^2/(d*x+c)+2*B^2*(-a*d+b*c)*g^2*(b*x+a)/
d^2/i^2/(d*x+c)-2*B^2*(-a*d+b*c)*g^2*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/d^2/i^2/
(d*x+c)+2*b*B*(-a*d+b*c)*g^2*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*
x+c)))/d^3/i^2+b*g^2*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^2/i^2+(-a*d+b*
c)*g^2*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^2/i^2/(d*x+c)+2*b*(-a*d+b*c)
*g^2*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^3/i^2+2*b*B^2
*(-a*d+b*c)*g^2*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i^2+4*b*B*(-a*d+b*c)*g^2
*(A+B*ln(e*(b*x+a)/(d*x+c)))*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i^2-4*b*B^2
*(-a*d+b*c)*g^2*polylog(3,d*(b*x+a)/b/(d*x+c))/d^3/i^2
```

Rubi [B] time = 5.09, antiderivative size = 1681, normalized size of antiderivative = 3.58, number of steps used = 94, number of rules used = 26, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.619, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^
2,x]
```

```
[Out] (-2*B^2*(b*c - a*d)^2*g^2)/(d^3*i^2*(c + d*x)) - (2*b*B^2*(b*c - a*d)*g^2*L
og[a + b*x])/(d^3*i^2) - (a*b*B^2*g^2*Log[a + b*x]^2)/(d^2*i^2) - (b*B^2*(b
*c - a*d)*g^2*Log[a + b*x]^2)/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*Log[a +
b*x]*Log[(c + d*x)^(-1)]^2)/(d^3*i^2) - (2*b*B^2*(b*c - a*d)*g^2*Log[-((d*(
a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/(d^3*i^2) + (2*B*(b*c - a*d)
^2*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^3*i^2*(c + d*x)) + (2*a*b*B
*g^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^2*i^2) + (2*b*B*
(b*c - a*d)*g^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^3*i^2
) + (b^2*g^2*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(d^2*i^2) - ((b*c -
a*d)^2*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(d^3*i^2*(c + d*x)) + (2
*b*B^2*(b*c - a*d)*g^2*Log[c + d*x])/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*L
og[a + b*x]^2*Log[c + d*x])/(d^3*i^2) + (2*b^2*B^2*c*g^2*Log[-((d*(a + b*x)
)/(b*c - a*d))]*Log[c + d*x])/(d^3*i^2) + (4*A*b*B*(b*c - a*d)*g^2*Log[-((d
*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^
2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^3*i^2) + (4*b*B^2*(b*c
 - a*d)*g^2*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x])/(d^3*i^2) - (4*b
*B^2*(b*c - a*d)*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[
(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d^3*i^2) - (
2*b^2*B*c*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d^3*i^2)
- (2*b*B*(b*c - a*d)*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])
/(d^3*i^2) - (2*b*(b*c - a*d)*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Lo
g[c + d*x])/(d^3*i^2) - (b^2*B^2*c*g^2*Log[c + d*x]^2)/(d^3*i^2) - (2*A*b*B
*(b*c - a*d)*g^2*Log[c + d*x]^2)/(d^3*i^2) - (b*B^2*(b*c - a*d)*g^2*Log[c +
 d*x]^2)/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*Log[a + b*x]*Log[c + d*x]^2)/
(d^3*i^2) - (2*b*B^2*(b*c - a*d)*g^2*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d
*x]^2)/(d^3*i^2) - (2*b*B^2*(b*c - a*d)*g^2*Log[c + d*x]^3)/(3*d^3*i^2) + (
2*a*b*B^2*g^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) + (2*b
*B^2*(b*c - a*d)*g^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^3*i^2)
```

```
 - (2*b*B^2*(b*c - a*d)*g^2*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/
(d^3*i^2) + (2*a*b*B^2*g^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*i
^2) + (2*b*B^2*(b*c - a*d)*g^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d
^3*i^2) - (4*b*B^2*(b*c - a*d)*g^2*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/
(b*c - a*d))])/(d^3*i^2) + (2*b^2*B^2*c*g^2*PolyLog[2, (b*(c + d*x))/(b*c -
 a*d)])/(d^3*i^2) + (4*A*b*B*(b*c - a*d)*g^2*PolyLog[2, (b*(c + d*x))/(b*c
- a*d)])/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*PolyLog[2, (b*(c + d*x))/(b*c
 - a*d)])/(d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2*Log[(c + d*x)^(-1)]*PolyLog[
2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) - (4*b*B^2*(b*c - a*d)*g^2*(Log[a
+ b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*
(c + d*x))/(b*c - a*d)])/(d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2*PolyLog[3, -(
(d*(a + b*x))/(b*c - a*d))])/(d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2*PolyLog[3
, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
```

```
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
```

```
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(93c+93dx)^2}\,dx = \int \left(\frac{b^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8649d^2} + \frac{(-bc+ad)^2g^2\left(A+B\log\left(\frac{e(a+bx}{c+dx}\right.\right.}{8649d^2(c+dx)^2}\right.$$

$$= \frac{\left(b^2g^2\right)\int\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\,dx}{8649d^2} - \frac{\left(2b(bc-ad)g^2\right)\int\frac{\left(A+B\log\left(\frac{e(a}{c+}\right.\right.}{c+dx}}{8649d^2}$$

$$= \frac{b^2g^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8649d^2} - \frac{(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8649d^3(c+dx)}$$

$$= \frac{b^2g^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8649d^2} - \frac{(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8649d^3(c+dx)}$$

$$= \frac{b^2g^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8649d^2} - \frac{(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8649d^3(c+dx)}$$

$$= \frac{b^2g^2x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8649d^2} - \frac{(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8649d^3(c+dx)}$$

$$= \frac{2B(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{8649d^3(c+dx)} + \frac{2abBg^2\log(a+bx)\left(A+B\right.}{8649d^2}$$

$$= \frac{2B(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{8649d^3(c+dx)} + \frac{2abBg^2\log(a+bx)\left(A+B\right.}{8649d^2}$$

$$= \frac{2B(bc-ad)^2g^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{8649d^3(c+dx)} + \frac{2abBg^2\log(a+bx)\left(A+B\right.}{8649d^2}$$

$$= -\frac{2B^2(bc-ad)^2g^2}{8649d^3(c+dx)} - \frac{2bB^2(bc-ad)g^2\log(a+bx)}{8649d^3} + \frac{2B(bc-ad)^2g^2}{864}$$

$$= -\frac{2B^2(bc-ad)^2g^2}{8649d^3(c+dx)} - \frac{2bB^2(bc-ad)g^2\log(a+bx)}{8649d^3} + \frac{2B(bc-ad)^2g^2}{864}$$

$$= -\frac{2B^2(bc-ad)^2g^2}{8649d^3(c+dx)} - \frac{2bB^2(bc-ad)g^2\log(a+bx)}{8649d^3} - \frac{abB^2g^2\log^2(a}{8649d^2}$$

$$= -\frac{2B^2(bc-ad)^2g^2}{8649d^3(c+dx)} - \frac{2bB^2(bc-ad)g^2\log(a+bx)}{8649d^3} - \frac{abB^2g^2\log^2(a}{8649d^2}$$

$$= -\frac{2B^2(bc-ad)^2g^2}{8649d^3(c+dx)} - \frac{2bB^2(bc-ad)g^2\log(a+bx)}{8649d^3} - \frac{abB^2g^2\log^2(a}{8649d^2}$$

$$= -\frac{2B^2(bc-ad)^2g^2}{8649d^3(c+dx)} - \frac{2bB^2(bc-ad)g^2\log(a+bx)}{8649d^3} - \frac{abB^2g^2\log^2(a}{8649d^2}$$

$$= -\frac{2B^2(bc-ad)^2g^2}{8649d^3(c+dx)} - \frac{2bB^2(bc-ad)g^2\log(a+bx)}{8649d^3} - \frac{abB^2g^2\log^2(a}{8649d^2}$$

Mathematica [B] time = 4.21, size = 1969, normalized size = 4.20

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d
*i*x)^2,x]
```

```
[Out] (g^2*(A^2*b^2*d*x - (A^2*(b*c - a*d)^2)/(c + d*x) + 2*A^2*b*(-(b*c) + a*d)*
Log[c + d*x] + (2*a^2*A*B*d^2*(b*c - a*d + b*(c + d*x)*Log[a/b + x] + (-(b*
c) + a*d)*Log[(e*(a + b*x))/(c + d*x)] - b*c*Log[(b*(c + d*x))/(b*c - a*d)]
 - b*d*x*Log[(b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)*(c + d*x)) + 2*a*A*b
*B*d*(-Log[c/d + x]^2 + 2*Log[c/d + x]*Log[c + d*x] + 2*(-(c/(c + d*x)) + (
b*c*Log[a + b*x])/(-(b*c) + a*d) + (b*c*Log[c + d*x])/(b*c - a*d) - Log[a/b
 + x]*Log[c + d*x] + Log[(e*(a + b*x))/(c + d*x)]*(c/(c + d*x) + Log[c + d*
x]) + Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)]) + 2*PolyLog[2, (d*(a + b
*x))/(-(b*c) + a*d)]) + 2*A*b^2*B*(d*(a/b + x)*(-1 + Log[a/b + x]) - (c^2*L
og[a/b + x])/(c + d*x) - (c + d*x)*(-1 + Log[c/d + x]) + c*Log[c/d + x]^2 +
 (c^2*(1 + Log[c/d + x]))/(c + d*x) + (b*c^2*(Log[a + b*x] - Log[c + d*x]))
/(b*c - a*d) + (-Log[a/b + x] + Log[c/d + x] + Log[(e*(a + b*x))/(c + d*x)]
)*(d*x - c^2/(c + d*x) - 2*c*Log[c + d*x]) - 2*c*(Log[a/b + x]*Log[(b*(c +
d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])) - (a^2*B^2*
d^2*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a +
 b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]
 + (b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)]^2 - 2*b*(c + d*x)*Log[c + d*x]
- 2*b*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)]
 + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d
)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log[(b*c -
 a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)
/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*
(c + d*x)) + b^2*B^2*((d*(a + b*x)*Log[(e*(a + b*x))/(c + d*x)]^2)/b - (c^2
*Log[(e*(a + b*x))/(c + d*x)]^2)/(c + d*x) + 2*c*Log[(e*(a + b*x))/(c + d*x
)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - (c^2*(2*b*c - 2*a*d + 2*b*(c + d*x)*L
og[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Lo
g[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*
(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(
c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) -
2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log[(b*c - a*d)/
(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c
+ b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(c + d
*x)) - ((b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-
(b*c) + a*d)] - 2*Log[(e*(a + b*x))/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d
*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/b + 4*c*(Log[(e*(a + b*x)
)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b
*x))/(b*(c + d*x))])) + 2*a*b*B^2*d*((c*Log[(e*(a + b*x))/(c + d*x)]^2)/(c
+ d*x) - Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - 2*
Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + (c*(
2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x)
)/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*
b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(
b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log
[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])
+ b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c)
+ a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c
 - a*d)])))/((b*c - a*d)*(c + d*x)) + 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*
x))])))/(d^3*i^2)
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2b^2g^2x^2 + 2\,A^2abg^2x + A^2a^2g^2 + \left(B^2b^2g^2x^2 + 2\,B^2abg^2x + B^2a^2g^2\right)\log\left(\frac{bex+ae}{dx+c}\right)^2 + 2\,\left(ABb^2g^2x^2 + \right.}{d^2i^2x^2 + 2\,cdi^2x + c^2i^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, alg
orithm="fricas")
```

```
[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^
2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*
b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/
(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.97, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^2 \left(B\ln\left(\frac{(bx+a)e}{dx+c}\right) + A\right)^2}{(dix + ci)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2,x)
```

```
[Out] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-A^2b^2\left(\frac{c^2}{d^4i^2x + cd^3i^2} - \frac{x}{d^2i^2} + \frac{2\,c\log\left(dx + c\right)}{d^3i^2}\right)g^2 + 2\,A^2abg^2\left(\frac{c}{d^3i^2x + cd^2i^2} + \frac{\log\left(dx + c\right)}{d^2i^2}\right) - 2\,ABa^2g^2\left(\frac{\log\left(\right.}{d^2i^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, alg
orithm="maxima")
```

```
[Out] -A^2*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/(d^2*i^2) + 2*c*log(d*x + c)/(d^3
*i^2))*g^2 + 2*A^2*a*b*g^2*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i
^2)) - 2*A*B*a^2*g^2*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d
*i^2) - 1/(d^2*i^2*x + c*d*i^2) - b*log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*
log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A^2*a^2*g^2/(d^2*i^2*x + c*d*i^2) - 1
/3*(2*((b^2*c*d*g^2 - a*b*d^2*g^2)*B^2*x + (b^2*c^2*g^2 - a*b*c*d*g^2)*B^2)
*log(d*x + c)^3 - 3*(B^2*b^2*d^2*g^2*x^2 + B^2*b^2*c*d*g^2*x - (b^2*c^2*g^2
 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)*B^2)*log(d*x + c)^2)/(d^4*i^2*x + c*d^3*i^2
) - integrate(-(B^2*a^2*d^2*g^2*log(e)^2 + (B^2*b^2*d^2*g^2*log(e)^2 + 2*A*
B*b^2*d^2*g^2*log(e))*x^2 + (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^
2*a^2*d^2*g^2)*log(b*x + a)^2 + 2*(B^2*a*b*d^2*g^2*log(e)^2 + 2*A*B*a*b*d^2
```

```
*g^2*log(e))*x + 2*(B^2*a^2*d^2*g^2*log(e) + (B^2*b^2*d^2*g^2*log(e) + A*B*
b^2*d^2*g^2)*x^2 + 2*(B^2*a*b*d^2*g^2*log(e) + A*B*a*b*d^2*g^2)*x)*log(b*x
+ a) + 2*((b^2*c^2*g^2 - 2*a*b*c*d*g^2 - (g^2*log(e) - g^2)*a^2*d^2)*B^2 -
(A*B*b^2*d^2*g^2 + (g^2*log(e) + g^2)*B^2*b^2*d^2)*x^2 - (2*A*B*a*b*d^2*g^2
 + (2*a*b*d^2*g^2*log(e) + b^2*c*d*g^2)*B^2)*x - (B^2*b^2*d^2*g^2*x^2 + 2*B
^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log(b*x + a))*log(d*x + c))/(d^4*i^2*x^
2 + 2*c*d^3*i^2*x + c^2*d^2*i^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^2\,{\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}^2}{{\left(c\,i+d\,i\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^
2,x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.94 $\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dix)^2}\,dx$

Optimal. Leaf size=261

$$-\frac{2bBg\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i^2}-\frac{bg\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{d^2i^2}-\frac{g(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+\right.}{di^2(c+dx)}$$

```
[Out] 2*A*B*g*(b*x+a)/d/i^2/(d*x+c)-2*B^2*g*(b*x+a)/d/i^2/(d*x+c)+2*B^2*g*(b*x+a)
*ln(e*(b*x+a)/(d*x+c))/d/i^2/(d*x+c)-g*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^
2/d/i^2/(d*x+c)-b*g*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/
d^2/i^2-2*b*B*g*(A+B*ln(e*(b*x+a)/(d*x+c)))*polylog(2,d*(b*x+a)/b/(d*x+c))/
d^2/i^2+2*b*B^2*g*polylog(3,d*(b*x+a)/b/(d*x+c))/d^2/i^2
```

Rubi [B] time = 4.24, antiderivative size = 1060, normalized size of antiderivative = 4.06, number of steps used = 72, number of rules used = 25, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$\frac{bB^2g\log^3(c+dx)}{3d^2i^2}-\frac{bB^2g\log(a+bx)\log^2(c+dx)}{d^2i^2}+\frac{bB^2g\log\left(\frac{e(a+bx)}{c+dx}\right)\log^2(c+dx)}{d^2i^2}+\frac{bB^2g\log^2(c+dx)}{d^2i^2}+\frac{AbBg}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^2,
x]
```

```
[Out] (2*B^2*(b*c - a*d)*g)/(d^2*i^2*(c + d*x)) + (2*b*B^2*g*Log[a + b*x])/(d^2*i
^2) + (b*B^2*g*Log[a + b*x]^2)/(d^2*i^2) - (b*B^2*g*Log[a + b*x]*Log[(c + d
*x)^(-1)]^2)/(d^2*i^2) + (b*B^2*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c
+ d*x)^(-1)]^2)/(d^2*i^2) - (2*B*(b*c - a*d)*g*(A + B*Log[(e*(a + b*x))/(c
+ d*x)]))/(d^2*i^2*(c + d*x)) - (2*b*B*g*Log[a + b*x]*(A + B*Log[(e*(a + b*
x))/(c + d*x)]))/(d^2*i^2) + ((b*c - a*d)*g*(A + B*Log[(e*(a + b*x))/(c + d
*x)])^2)/(d^2*i^2*(c + d*x)) - (2*b*B^2*g*Log[c + d*x])/(d^2*i^2) - (b*B^2*
g*Log[a + b*x]^2*Log[c + d*x])/(d^2*i^2) - (2*A*b*B*g*Log[-((d*(a + b*x))/(
b*c - a*d))]*Log[c + d*x])/(d^2*i^2) - (2*b*B^2*g*Log[-((d*(a + b*x))/(b*c
- a*d))]*Log[c + d*x])/(d^2*i^2) - (2*b*B^2*g*Log[a + b*x]*Log[(c + d*x)^(-
1)]*Log[c + d*x])/(d^2*i^2) + (2*b*B^2*g*Log[-((d*(a + b*x))/(b*c - a*d))]*
(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c +
 d*x])/(d^2*i^2) + (2*b*B*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*
x])/(d^2*i^2) + (b*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/(
d^2*i^2) + (A*b*B*g*Log[c + d*x]^2)/(d^2*i^2) + (b*B^2*g*Log[c + d*x]^2)/(d
^2*i^2) - (b*B^2*g*Log[a + b*x]*Log[c + d*x]^2)/(d^2*i^2) + (b*B^2*g*Log[(e
*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/(d^2*i^2) + (b*B^2*g*Log[c + d*x]^3)
/(3*d^2*i^2) - (2*b*B^2*g*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^2
*i^2) + (b*B^2*g*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) -
 (2*b*B^2*g*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*i^2) + (2*b*B^2*
g*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*i^2) - (2*A*b
*B*g*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) - (2*b*B^2*g*PolyLog[
2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) - (2*b*B^2*g*Log[(c + d*x)^(-1)]*P
olyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) + (2*b*B^2*g*(Log[a + b*x]
+ Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c + d*
x))/(b*c - a*d)])/(d^2*i^2) - (2*b*B^2*g*PolyLog[3, -((d*(a + b*x))/(b*c -
a*d))])/(d^2*i^2) - (2*b*B^2*g*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/(d^2*
i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(94c+94dx)^2}\,dx = \int\left(\frac{(-bc+ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8836d(c+dx)^2} + \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8836d(c+dx)}\right) dx$$

$$= \frac{(bg)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}\,dx}{8836d} - \frac{((bc-ad)g)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(c+dx)^2}\,dx}{8836d}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8836d^2(c+dx)} + \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+d}{8836d^2}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8836d^2(c+dx)} + \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+d}{8836d^2}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8836d^2(c+dx)} + \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+d}{8836d^2}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{8836d^2(c+dx)} + \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2\log(c+d}{8836d^2}$$

$$= -\frac{B(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4418d^2(c+dx)} - \frac{bBg\log(a+bx)\left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{4418d^2}$$

$$= -\frac{B(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4418d^2(c+dx)} - \frac{bBg\log(a+bx)\left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{4418d^2}$$

$$= -\frac{B(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4418d^2(c+dx)} - \frac{bBg\log(a+bx)\left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{4418d^2}$$

$$= \frac{B^2(bc-ad)g}{4418d^2(c+dx)} + \frac{bB^2g\log(a+bx)}{4418d^2} - \frac{B(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right.}{4418d^2(c+dx)}$$

$$= \frac{B^2(bc-ad)g}{4418d^2(c+dx)} + \frac{bB^2g\log(a+bx)}{4418d^2} - \frac{B(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right.}{4418d^2(c+dx)}$$

$$= \frac{B^2(bc-ad)g}{4418d^2(c+dx)} + \frac{bB^2g\log(a+bx)}{4418d^2} + \frac{bB^2g\log^2(a+bx)}{8836d^2} - \frac{B(bc-ad)}{44}$$

$$= \frac{B^2(bc-ad)g}{4418d^2(c+dx)} + \frac{bB^2g\log(a+bx)}{4418d^2} + \frac{bB^2g\log^2(a+bx)}{8836d^2} - \frac{B(bc-ad)}{44}$$

$$= \frac{B^2(bc-ad)g}{4418d^2(c+dx)} + \frac{bB^2g\log(a+bx)}{4418d^2} + \frac{bB^2g\log^2(a+bx)}{8836d^2} - \frac{B(bc-ad)}{44}$$

$$= \frac{B^2(bc-ad)g}{4418d^2(c+dx)} + \frac{bB^2g\log(a+bx)}{4418d^2} + \frac{bB^2g\log^2(a+bx)}{8836d^2} - \frac{bB^2g\log(a}{}$$

$$= \frac{B^2(bc-ad)g}{4418d^2(c+dx)} + \frac{bB^2g\log(a+bx)}{4418d^2} + \frac{bB^2g\log^2(a+bx)}{8836d^2} - \frac{bB^2g\log(a}{}$$

Mathematica [B] time = 1.71, size = 1107, normalized size = 4.24

$$g\left(b\log(c+dx)A^2+\frac{(bc-ad)A^2}{c+dx}+\frac{2aBd\left(bc-b\log\left(\frac{b(c+dx)}{bc-ad}\right)c-ad+b(c+dx)\log\left(\frac{a}{b}+x\right)+(ad-bc)\log\left(\frac{e(a+bx)}{c+dx}\right)-bdx\log\left(\frac{b(c+dx)}{bc-ad}\right)\right)A}{(bc-ad)(c+dx)}+bB\left(-\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i
*x)^2,x]
```

```
[Out] (g*((A^2*(b*c - a*d))/(c + d*x) + A^2*b*Log[c + d*x] + (2*a*A*B*d*(b*c - a*
d + b*(c + d*x)*Log[a/b + x] + (-(b*c) + a*d)*Log[(e*(a + b*x))/(c + d*x)]
- b*c*Log[(b*(c + d*x))/(b*c - a*d)] - b*d*x*Log[(b*(c + d*x))/(b*c - a*d)]
))/((b*c - a*d)*(c + d*x)) + A*b*B*(-Log[c/d + x]^2 + 2*Log[c/d + x]*Log[c
+ d*x] + 2*(-(c/(c + d*x)) + (b*c*Log[a + b*x])/(-(b*c) + a*d) + (b*c*Log[c
 + d*x])/(b*c - a*d) - Log[a/b + x]*Log[c + d*x] + Log[(e*(a + b*x))/(c + d
*x)]*(c/(c + d*x) + Log[c + d*x]) + Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a
*d)]) + 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - (a*B^2*d*(2*b*c - 2*a
*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)
] - 2*b*(c + d*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + (b*c - a*d)*L
og[(e*(a + b*x))/(c + d*x)]^2 - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*
Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(
Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[
2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d
*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)])
 - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*x)) + b*B
^2*((c*Log[(e*(a + b*x))/(c + d*x)]^2)/(c + d*x) - Log[(e*(a + b*x))/(c + d
*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - 2*Log[(e*(a + b*x))/(c + d*x)]*Poly
Log[2, (d*(a + b*x))/(b*(c + d*x))] + (c*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log
[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[
a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c
 + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c
+ d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*
PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log[(b*c - a*d)/(b
*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c +
b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*x
)) + 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])))/(d^2*i^2)
```

fricas [F] time = 1.18, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2bgx+A^2ag+\left(B^2bgx+B^2ag\right)\log\left(\frac{bex+ae}{dx+c}\right)^2+2\left(ABbgx+ABag\right)\log\left(\frac{bex+ae}{dx+c}\right)}{d^2i^2x^2+2\,cdi^2x+c^2i^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algor
ithm="fricas")
```

```
[Out] integral((A^2*b*g*x + A^2*a*g + (B^2*b*g*x + B^2*a*g)*log((b*e*x + a*e)/(d*
x + c))^2 + 2*(A*B*b*g*x + A*B*a*g)*log((b*e*x + a*e)/(d*x + c)))/(d^2*i^2*
x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.61, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)\left(B\ln\left(\frac{(bx+a)e}{dx+c}\right)+A\right)^{2}}{\left(dix+ci\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2,x)
```

```
[Out] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^{2}bg\left(\frac{c}{d^{3}i^{2}x+cd^{2}i^{2}}+\frac{\log\left(dx+c\right)}{d^{2}i^{2}}\right)-2\,ABag\left(\frac{\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)}{d^{2}i^{2}x+cdi^{2}}-\frac{1}{d^{2}i^{2}x+cdi^{2}}-\frac{b\log\left(bx+a\right)}{\left(bcd-ad^{2}\right)i^{2}}+\frac{b\log\left(dx+c\right)}{\left(bcd-ad^{2}\right)i^{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algor
ithm="maxima")
```

```
[Out] A^2*b*g*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - 2*A*B*a*g*(l
og(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d*i^2) - 1/(d^2*i^2*x +
c*d*i^2) - b*log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*log(d*x + c)/((b*c*d -
a*d^2)*i^2)) - A^2*a*g/(d^2*i^2*x + c*d*i^2) + 1/3*(3*(b*c*g - a*d*g)*B^2*l
og(d*x + c)^2 + (B^2*b*d*g*x + B^2*b*c*g)*log(d*x + c)^3)/(d^3*i^2*x + c*d^
2*i^2) - integrate(-(B^2*a*d*g*log(e)^2 + (B^2*b*d*g*x + B^2*a*d*g)*log(b*x
 + a)^2 + (B^2*b*d*g*log(e)^2 + 2*A*B*b*d*g*log(e))*x + 2*(B^2*a*d*g*log(e)
 + (B^2*b*d*g*log(e) + A*B*b*d*g)*x)*log(b*x + a) - 2*(((g*log(e) - g)*a*d
+ b*c*g)*B^2 + (B^2*b*d*g*log(e) + A*B*b*d*g)*x + (B^2*b*d*g*x + B^2*a*d*g)
*log(b*x + a))*log(d*x + c))/(d^3*i^2*x^2 + 2*c*d^2*i^2*x + c^2*d*i^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)\,{\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}^2}{{\left(c\,i+d\,i\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^2,
x)
```

```
[Out] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.95 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dix)^2}\,dx$

Optimal. Leaf size=152

$$\frac{(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{i^2(c+dx)(bc-ad)}-\frac{2AB(a+bx)}{i^2(c+dx)(bc-ad)}-\frac{2B^2(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{i^2(c+dx)(bc-ad)}+\frac{2B^2(a+bx)}{i^2(c+dx)(bc-ad)}$$

```
[Out] -2*A*B*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)+2*B^2*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)-
2*B^2*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)/i^2/(d*x+c)+(b*x+a)*(A+B*ln(
e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)/i^2/(d*x+c)
```

Rubi [C] time = 0.78, antiderivative size = 472, normalized size of antiderivative = 3.11, number of steps used = 26, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {2525, 12, 2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{2bB^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{di^2(bc-ad)}+\frac{2bB^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{di^2(bc-ad)}+\frac{2bB\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{di^2(bc-ad)}+\frac{2B\left(B\log\left(\frac{e(a\cdot}{c+}\right.\right.}{di^2(c+}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/(c*i + d*i*x)^2,x]
```

```
[Out] (-2*B^2)/(d*i^2*(c + d*x)) - (2*b*B^2*Log[a + b*x])/(d*(b*c - a*d)*i^2) - (
b*B^2*Log[a + b*x]^2)/(d*(b*c - a*d)*i^2) + (2*B*(A + B*Log[(e*(a + b*x))/(
c + d*x)]))/(d*i^2*(c + d*x)) + (2*b*B*Log[a + b*x]*(A + B*Log[(e*(a + b*x)
)/(c + d*x)]))/(d*(b*c - a*d)*i^2) - (A + B*Log[(e*(a + b*x))/(c + d*x)])^2
/(d*i^2*(c + d*x)) + (2*b*B^2*Log[c + d*x])/(d*(b*c - a*d)*i^2) + (2*b*B^2*
Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d*(b*c - a*d)*i^2) - (2*b*
B*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d*(b*c - a*d)*i^2) -
(b*B^2*Log[c + d*x]^2)/(d*(b*c - a*d)*i^2) + (2*b*B^2*Log[a + b*x]*Log[(b*(
c + d*x))/(b*c - a*d)])/(d*(b*c - a*d)*i^2) + (2*b*B^2*PolyLog[2, -((d*(a +
 b*x))/(b*c - a*d))])/(d*(b*c - a*d)*i^2) + (2*b*B^2*PolyLog[2, (b*(c + d*x
))/(b*c - a*d)])/(d*(b*c - a*d)*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
```

```
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(95c+95dx)^2}\,dx = -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9025d(c+dx)} + \frac{(2B)\int \frac{(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{95(a+bx)(c+dx)^2}dx}{95d}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9025d(c+dx)} + \frac{(2B(bc-ad))\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)(c+dx)^2}dx}{9025d}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9025d(c+dx)} + \frac{(2B(bc-ad))\int \left(\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(bc-ad)^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right.}{(bc-ad)(c+dx)^2}\right.}{9025d}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9025d(c+dx)} - \frac{(2B)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^2}dx}{9025} - \frac{(2bB)\int \frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}dx}{9025(bc-ad)}$$

$$= \frac{2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c+dx)} + \frac{2bB\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(bc-ad)} - \frac{\left(A+B\log\right.}{9025d}$$

$$= \frac{2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c+dx)} + \frac{2bB\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(bc-ad)} - \frac{\left(A+B\log\right.}{9025d}$$

$$= \frac{2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c+dx)} + \frac{2bB\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(bc-ad)} - \frac{\left(A+B\log\right.}{9025d}$$

$$= -\frac{2B^2}{9025d(c+dx)} - \frac{2bB^2\log(a+bx)}{9025d(bc-ad)} + \frac{2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c+dx)} + \frac{2bB\log(a+}{}$$

$$= -\frac{2B^2}{9025d(c+dx)} - \frac{2bB^2\log(a+bx)}{9025d(bc-ad)} + \frac{2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9025d(c+dx)} + \frac{2bB\log(a+}{}$$

$$= -\frac{2B^2}{9025d(c+dx)} - \frac{2bB^2\log(a+bx)}{9025d(bc-ad)} - \frac{bB^2\log^2(a+bx)}{9025d(bc-ad)} + \frac{2B\left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{9025d(c+dx)}$$

$$= -\frac{2B^2}{9025d(c+dx)} - \frac{2bB^2\log(a+bx)}{9025d(bc-ad)} - \frac{bB^2\log^2(a+bx)}{9025d(bc-ad)} + \frac{2B\left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{9025d(c+dx)}$$

Mathematica [C] time = 0.49, size = 315, normalized size = 2.07

$$\frac{B\left(2(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2b(c+dx)\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-2b(c+dx)\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-bB(c+dx)\left(\log(a+bx)\left(\log(a+bx)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/(c*i + d*i*x)^2,x]
```

```
[Out] (-(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + (B*(2*(b*c - a*d)*(A + B*Log[(e*
(a + b*x))/(c + d*x)]) + 2*b*(c + d*x)*Log[a + b*x]*(A + B*Log[(e*(a + b*x)
)/(c + d*x)]) - 2*b*(c + d*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c +
d*x] - 2*B*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]
) - b*B*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c -
a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*B*(c + d*x)*((2*Lo
g[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2,
 (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d))/(d*i^2*(c + d*x))
```

fricas [A] time = 0.87, size = 155, normalized size = 1.02

$$-\frac{\left(A^2-2\,AB+2\,B^2\right)bc-\left(A^2-2\,AB+2\,B^2\right)ad-\left(B^2bdx+B^2ad\right)\log\left(\frac{bex+ae}{dx+c}\right)^2-2\left(\left(AB-B^2\right)bdx+\left(AB-B^2\right)\right.}{\left(bcd^2-ad^3\right)i^2x+\left(bc^2d-acd^2\right)i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="fricas
")
```

```
[Out] -((A^2 - 2*A*B + 2*B^2)*b*c - (A^2 - 2*A*B + 2*B^2)*a*d - (B^2*b*d*x + B^2*
a*d)*log((b*e*x + a*e)/(d*x + c))^2 - 2*((A*B - B^2)*b*d*x + (A*B - B^2)*a*
d)*log((b*e*x + a*e)/(d*x + c)))/((b*c*d^2 - a*d^3)*i^2*x + (b*c^2*d - a*c*
d^2)*i^2)
```

giac [A] time = 1.27, size = 179, normalized size = 1.18

$$-\left(\frac{(bxe+ae)B^2\log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c}+\frac{2\,(bxe+ae)\left(AB-B^2\right)\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c}+\frac{(bxe+ae)\left(A^2-2\,AB+2\,B^2\right)}{dx+c}\right)\left(\frac{bc}{(bce-ade)(\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="giac")
```

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

maple [B] time = 0.05, size = 1236, normalized size = 8.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^2,x)
```

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

maxima [B] time = 1.30, size = 416, normalized size = 2.74

$$\left(2\left(\frac{1}{d^2i^2x+cdi^2}+\frac{b\log(bx+a)}{(bcd-ad^2)i^2}-\frac{b\log(dx+c)}{(bcd-ad^2)i^2}\right)\log\left(\frac{bex}{dx+c}+\frac{ae}{dx+c}\right)-\frac{(bdx+bc)\log(bx+a)^2+(bdx+}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^2,x, algorithm="maxima
")
```

```
[Out] (2*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log(
d*x + c)/((b*c*d - a*d^2)*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - ((b*
d*x + b*c)*log(b*x + a)^2 + (b*d*x + b*c)*log(d*x + c)^2 + 2*b*c - 2*a*d +
2*(b*d*x + b*c)*log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))
*log(d*x + c))/(b*c^2*d*i^2 - a*c*d^2*i^2 + (b*c*d^2*i^2 - a*d^3*i^2)*x))*B
^2 - 2*A*B*(log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^2*i^2*x + c*d*i^2) - 1/
(d^2*i^2*x + c*d*i^2) - b*log(b*x + a)/((b*c*d - a*d^2)*i^2) + b*log(d*x +
c)/((b*c*d - a*d^2)*i^2)) - B^2*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(d^2
*i^2*x + c*d*i^2) - A^2/(d^2*i^2*x + c*d*i^2)
```

mupad [B] time = 5.62, size = 222, normalized size = 1.46

$$\frac{\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)\left(\frac{2\,B^2}{b\,d^2\,i^2}-\frac{2\,A\,B}{b\,d^2\,i^2}\right)}{\frac{x}{b}+\frac{c}{b\,d}}-\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2\left(\frac{B^2}{d^2\,i^2\,\left(x+\frac{c}{d}\right)}+\frac{B^2\,b}{d\,i^2\,(a\,d-b\,c)}\right)-\frac{A^2-2\,A\,B+2\,B^2}{x\,d^2\,i^2+c\,d\,i^2}+\frac{B\,b\,\mathrm{atan}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/(c*i + d*i*x)^2,x)
```

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

sympy [B] time = 3.46, size = 432, normalized size = 2.84

$$\frac{2Bb(A-B)\log\left(x+\frac{2ABabd+2ABb^2c-2B^2abd-2B^2b^2c-\frac{2Ba^2bd^2(A-B)}{ad-bc}+\frac{4Bab^2cd(A-B)}{ad-bc}-\frac{2Bb^3c^2(A-B)}{ad-bc}}{4ABb^2d-4B^2b^2d}\right)}{di^2(ad-bc)}-\frac{2Bb(A-B)\log\left(x+\frac{2ABab}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**2,x)
```

```
[Out] 2*B*b*(A - B)*log(x + (2*A*B*a*b*d + 2*A*B*b**2*c - 2*B**2*a*b*d - 2*B**2*b
**2*c - 2*B*a**2*b*d**2*(A - B)/(a*d - b*c) + 4*B*a*b**2*c*d*(A - B)/(a*d -
 b*c) - 2*B*b**3*c**2*(A - B)/(a*d - b*c))/(4*A*B*b**2*d - 4*B**2*b**2*d))/
(d*i**2*(a*d - b*c)) - 2*B*b*(A - B)*log(x + (2*A*B*a*b*d + 2*A*B*b**2*c -
2*B**2*a*b*d - 2*B**2*b**2*c + 2*B*a**2*b*d**2*(A - B)/(a*d - b*c) - 4*B*a*
b**2*c*d*(A - B)/(a*d - b*c) + 2*B*b**3*c**2*(A - B)/(a*d - b*c))/(4*A*B*b*
*2*d - 4*B**2*b**2*d))/(d*i**2*(a*d - b*c)) + (-2*A*B + 2*B**2)*log(e*(a +
b*x)/(c + d*x))/(c*d*i**2 + d**2*i**2*x) + (-B**2*a - B**2*b*x)*log(e*(a +
b*x)/(c + d*x))**2/(a*c*d*i**2 + a*d**2*i**2*x - b*c**2*i**2 - b*c*d*i**2*x
) + (-A**2 + 2*A*B - 2*B**2)/(c*d*i**2 + d**2*i**2*x)
```

3.96 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)(ci+dix)^2}\,dx$

Optimal. Leaf size=214

$$\frac{b\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^3}{3Bgi^2(bc-ad)^2}-\frac{d(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{gi^2(c+dx)(bc-ad)^2}+\frac{2ABd(a+bx)}{gi^2(c+dx)(bc-ad)^2}+\frac{2B^2d(a+bx)\log\left(\frac{e(a+bx)}{c+dx}\right)}{gi^2(c+dx)(bc-ad)^2}-\frac{}{gi^2}$$

```
[Out] 2*A*B*d*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d*x+c)-2*B^2*d*(b*x+a)/(-a*d+b*c)^2/g/i
^2/(d*x+c)+2*B^2*d*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)^2/g/i^2/(d*x+c)
-d*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^2/g/i^2/(d*x+c)+1/3*b*(
A+B*ln(e*(b*x+a)/(d*x+c)))^3/B/(-a*d+b*c)^2/g/i^2
```

Rubi [C] time = 6.47, antiderivative size = 1687, normalized size of antiderivative = 7.88, number of steps used = 87, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.738, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2525, 44, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)*(c*i + d*i*x)^2),
x]
```

```
[Out] (2*B^2)/((b*c - a*d)*g*i^2*(c + d*x)) + (2*b*B^2*Log[a + b*x])/((b*c - a*d)
^2*g*i^2) - (A*b*B*Log[a + b*x]^2)/((b*c - a*d)^2*g*i^2) + (b*B^2*Log[a + b
*x]^2)/((b*c - a*d)^2*g*i^2) + (b*B^2*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/(
(b*c - a*d)^2*g*i^2) - (b*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*
x)^(-1)]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[-((b*c - a*d)/(d*(a + b*x)))
]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[a + b*
x]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^2*g*i^2) - (2*B*(A + B*Log[
(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)*g*i^2*(c + d*x)) - (2*b*B*Log[a + b
*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^2*g*i^2) + (A + B*Lo
g[(e*(a + b*x))/(c + d*x)])^2/((b*c - a*d)*g*i^2*(c + d*x)) + (b*Log[a + b*
x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^2*g*i^2) - (2*b*B^2
*Log[c + d*x])/((b*c - a*d)^2*g*i^2) + (b*B^2*Log[a + b*x]^2*Log[c + d*x])/
((b*c - a*d)^2*g*i^2) + (2*A*b*B*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c +
d*x])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Lo
g[c + d*x])/((b*c - a*d)^2*g*i^2) + (2*b*B^2*Log[a + b*x]*Log[(c + d*x)^(-1
)]*Log[c + d*x])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*Log[-((d*(a + b*x))/(b*c
 - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)]
)*Log[c + d*x])/((b*c - a*d)^2*g*i^2) + (2*b*B*(A + B*Log[(e*(a + b*x))/(c
+ d*x)])*Log[c + d*x])/((b*c - a*d)^2*g*i^2) - (b*(A + B*Log[(e*(a + b*x))/
(c + d*x)])^2*Log[c + d*x])/((b*c - a*d)^2*g*i^2) - (A*b*B*Log[c + d*x]^2)/
((b*c - a*d)^2*g*i^2) + (b*B^2*Log[c + d*x]^2)/((b*c - a*d)^2*g*i^2) + (b*B
^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[(e*(a +
b*x))/(c + d*x)]*Log[c + d*x]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[c + d*x
]^3)/(3*(b*c - a*d)^2*g*i^2) + (2*A*b*B*Log[a + b*x]*Log[(b*(c + d*x))/(b*c
 - a*d)])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*Log[a + b*x]*Log[(b*(c + d*x))/(
b*c - a*d)])/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[a + b*x]^2*Log[(b*(c + d*x)
)/(b*c - a*d)])/((b*c - a*d)^2*g*i^2) + (2*A*b*B*PolyLog[2, -((d*(a + b*x))
/(b*c - a*d))])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*PolyLog[2, -((d*(a + b*x))
/(b*c - a*d))])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*Log[a + b*x]*PolyLog[2, -(
(d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g*i^2) + (2*A*b*B*PolyLog[2, (b
*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*PolyLog[2, (b*(c
 + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2) + (2*b*B^2*Log[(c + d*x)^(-1)]
```

```
*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*(L
og[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2
, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2) + (2*b*B^2*Log[(e*(a +
b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^2*
g*i^2) + (2*b*B^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*
g*i^2) + (2*b*B^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i
^2) + (2*b*B^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^2*g*
i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
```

```
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(96c+96dx)^2(ag+bgx)}\,dx = \int\left(\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc-ad)^2g(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc-ad)g(c+dx)^2} - \frac{bd\left(A+B\log\left(\frac{e(a+b}{c+d}\right.\right.}{9216(bc-ad)^2g(c+}\right.$$

$$= \frac{b^2\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}dx}{9216(bc-ad)^2g} - \frac{(bd)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}dx}{9216(bc-ad)^2g} - \frac{d\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(c+dx)^2}dx}{9216(bc-ad)g}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc-ad)^2g} - \frac{b\left(A+B\log\left(\right.\right.}{921}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc-ad)^2g} - \frac{b\left(A+B\log\left(\right.\right.}{921}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc-ad)^2g} - \frac{b\left(A+B\log\left(\right.\right.}{921}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9216(bc-ad)^2g} - \frac{b\left(A+B\log\left(\right.\right.}{921}$$

$$= -\frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4608(bc-ad)g(c+dx)} - \frac{bB\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4608(bc-ad)^2g} + \frac{\left(A+B\log\right.}{9216(bc-a}$$

$$= -\frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4608(bc-ad)g(c+dx)} - \frac{bB\log(a+bx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4608(bc-ad)^2g} + \frac{\left(A+B\log\right.}{9216(bc-a}$$

$$= -\frac{bB^2\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{9216(bc-ad)^2g} - \frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{4608(bc-ad)g(c+dx)} - \frac{bB\log(a+bx)\left(A\right.}{4608(bc}$$

$$= \frac{B^2}{4608(bc-ad)g(c+dx)} + \frac{bB^2\log(a+bx)}{4608(bc-ad)^2g} - \frac{bB^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{9216(bc-ad)^2g}$$

$$= \frac{B^2}{4608(bc-ad)g(c+dx)} + \frac{bB^2\log(a+bx)}{4608(bc-ad)^2g} - \frac{AbB\log^2(a+bx)}{9216(bc-ad)^2g} - \frac{bB^2\log\left(-\frac{b}{d(}\right.}{9216}$$

$$= \frac{B^2}{4608(bc-ad)g(c+dx)} + \frac{bB^2\log(a+bx)}{4608(bc-ad)^2g} - \frac{AbB\log^2(a+bx)}{9216(bc-ad)^2g} + \frac{bB^2\log^2(a+}{9216(bc-ad}$$

$$= \frac{B^2}{4608(bc-ad)g(c+dx)} + \frac{bB^2\log(a+bx)}{4608(bc-ad)^2g} - \frac{AbB\log^2(a+bx)}{9216(bc-ad)^2g} + \frac{bB^2\log^2(a+}{9216(bc-ad}$$

$$= \frac{B^2}{4608(bc-ad)g(c+dx)} + \frac{bB^2\log(a+bx)}{4608(bc-ad)^2g} - \frac{AbB\log^2(a+bx)}{9216(bc-ad)^2g} + \frac{bB^2\log^2(a+}{9216(bc-ad}$$

$$= \frac{B^2}{4608(bc-ad)g(c+dx)} + \frac{bB^2\log(a+bx)}{4608(bc-ad)^2g} - \frac{AbB\log^2(a+bx)}{9216(bc-ad)^2g} + \frac{bB^2\log^2(a+}{9216(bc-ad}$$

Mathematica [A] time = 0.74, size = 187, normalized size = 0.87

$$\frac{3b\left(A^2-2AB+2B^2\right)(c+dx)\log(a+bx)-3\left(A^2-2AB+2B^2\right)(ad+b(c+dx)\log(c+dx)-bc)+3B(Ab(c}{3gi^2(c+dx)(bc-}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)*(c*i + d*i*
x)^2),x]
```

```
[Out] (3*b*(A^2 - 2*A*B + 2*B^2)*(c + d*x)*Log[a + b*x] + 6*(A - B)*B*(b*c - a*d)
*Log[(e*(a + b*x))/(c + d*x)] + 3*B*(-(B*d*(a + b*x)) + A*b*(c + d*x))*Log[
(e*(a + b*x))/(c + d*x)]^2 + b*B^2*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]^3
 - 3*(A^2 - 2*A*B + 2*B^2)*(-(b*c) + a*d + b*(c + d*x)*Log[c + d*x]))/(3*(b
*c - a*d)^2*g*i^2*(c + d*x))
```

fricas [A] time = 0.90, size = 236, normalized size = 1.10

$$\frac{\left(B^2bdx+B^2bc\right)\log\left(\frac{bex+ae}{dx+c}\right)^3+3\left(A^2-2\,AB+2\,B^2\right)bc-3\left(A^2-2\,AB+2\,B^2\right)ad+3\left(ABbc-B^2ad+\left(AB-\right.\right.}{3\left(\left(b^2c^2d-2\,abcd^2+a^2d^3\right)gi^2x+\left(b^2c^3-\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algor
ithm="fricas")
```

```
[Out] 1/3*((B^2*b*d*x + B^2*b*c)*log((b*e*x + a*e)/(d*x + c))^3 + 3*(A^2 - 2*A*B
+ 2*B^2)*b*c - 3*(A^2 - 2*A*B + 2*B^2)*a*d + 3*(A*B*b*c - B^2*a*d + (A*B -
B^2)*b*d*x)*log((b*e*x + a*e)/(d*x + c))^2 + 3*(A^2*b*c + (A^2 - 2*A*B + 2*
B^2)*b*d*x - 2*(A*B - B^2)*a*d)*log((b*e*x + a*e)/(d*x + c)))/((b^2*c^2*d -
 2*a*b*c*d^2 + a^2*d^3)*g*i^2*x + (b^2*c^3 - 2*a*b*c^2*d + a^2*c*d^2)*g*i^2
)
```

giac [A] time = 1.44, size = 349, normalized size = 1.63

$$-\frac{\left(B^2be\log\left(\frac{bxe+ae}{dx+c}\right)^3+3\,ABbe\log\left(\frac{bxe+ae}{dx+c}\right)^2+3\,A^2be\log\left(\frac{bxe+ae}{dx+c}\right)-\frac{3\,(bxe+ae)B^2d\log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c}-\frac{6\,(bxe+ae)ABd\log\left(\frac{bxe+}{dx+}\right.}{dx+c}\right.}{3\left(bcg-ad\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algor
ithm="giac")
```

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

maple [B] time = 0.05, size = 1633, normalized size = 7.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x)
```

```
[Out] -1/i^2/(a*d-b*c)^3/g*A*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-1/i^2/(a*d
-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*b^2*c^2+2/i^2/(a*d-
b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+2/i^2/(a*d-b*c
)^3/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c+d/i^2/(a*d-b*c)^3/g*A^2*b*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2*d^2/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+1/3*d/i^2/(a*d-b*c)^3/g*B^2*b*ln(b/d*e+(a*d-b
*c)/(d*x+c)/d*e)^3*a-d^2/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)^2/(d*x+c)*a^2+2*d/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
*b*a-d/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*a+2/i^2/(a
*d-b*c)^3/g*A*B/(d*x+c)*b^2*c^2+2*d^2/i^2/(a*d-b*c)^3/g*A*B/(d*x+c)*a^2-2*d
/i^2/(a*d-b*c)^3/g*B^2*b*a+2/i^2/(a*d-b*c)^3/g*B^2*b^2*c+2*d/i^2/(a*d-b*c)^
3/g*A*B*b*a-2/i^2/(a*d-b*c)^3/g*A*B*b^2*c-1/i^2/(a*d-b*c)^3/g*A^2/(d*x+c)*b
^2*c^2-1/3/i^2/(a*d-b*c)^3/g*B^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*c-1/
i^2/(a*d-b*c)^3/g*A^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1/i^2/(a*d-b*c)
^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*c-2/i^2/(a*d-b*c)^3/g*B^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-d^2/i^2/(a*d-b*c)^3/g*A^2/(d*x+c)*a^2-2
/i^2/(a*d-b*c)^3/g*B^2/(d*x+c)*b^2*c^2-2*d^2/i^2/(a*d-b*c)^3/g*B^2/(d*x+c)*
a^2-d/i^2/(a*d-b*c)^3/g*A^2*b*a+1/i^2/(a*d-b*c)^3/g*A^2*b^2*c+4*d/i^2/(a*d-
b*c)^3/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*b*c+2*d/i^2/(a*d-b*c
)^3/g*A^2/(d*x+c)*a*b*c-2*d/i^2/(a*d-b*c)^3/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*b*a-2*d^2/i^2/(a*d-b*c)^3/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x
+c)*a^2+2*d/i^2/(a*d-b*c)^3/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)
*a*b*c-4*d/i^2/(a*d-b*c)^3/g*A*B/(d*x+c)*a*b*c-4*d/i^2/(a*d-b*c)^3/g*B^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*b*c+d/i^2/(a*d-b*c)^3/g*A*B*b*ln(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+4*d/i^2/(a*d-b*c)^3/g*B^2/(d*x+c)*a*b*c-2/i^
2/(a*d-b*c)^3/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2
```

maxima [B] time = 1.92, size = 1004, normalized size = 4.69

$$B^2\left(\frac{1}{\left(bcd-ad^2\right)gi^2x+\left(bc^2-acd\right)gi^2}+\frac{b\log\left(bx+a\right)}{\left(b^2c^2-2\,abcd+a^2d^2\right)gi^2}-\frac{b\log\left(dx+c\right)}{\left(b^2c^2-2\,abcd+a^2d^2\right)gi^2}\right)\log\left(\frac{bex}{dx+c}+\frac{a}{dx}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, algor
ithm="maxima")
```

```
[Out] B^2*(1/((b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/(
(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c
*d + a^2*d^2)*g*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 + 2*A*B*(1/((b
*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b^2*c^2 -
 2*a*b*c*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d
^2)*g*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 1/3*B^2*(3*((b*d*x + b*c
)*log(b*x + a)^2 + (b*d*x + b*c)*log(d*x + c)^2 + 2*b*c - 2*a*d + 2*(b*d*x
+ b*c)*log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))*log(d*x
+ c))*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i
^2 + a^2*c*d^2*g*i^2 + (b^2*c^2*d*g*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2
)*x) - ((b*d*x + b*c)*log(b*x + a)^3 - (b*d*x + b*c)*log(d*x + c)^3 + 3*(b*
d*x + b*c)*log(b*x + a)^2 + 3*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))*lo
g(d*x + c)^2 + 6*b*c - 6*a*d + 6*(b*d*x + b*c)*log(b*x + a) - 3*(2*b*d*x +
(b*d*x + b*c)*log(b*x + a)^2 + 2*b*c + 2*(b*d*x + b*c)*log(b*x + a))*log(d*
x + c))/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d^2*g*i^2 + (b^2*c^2*d*g
*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2)*x)) + A^2*(1/((b*c*d - a*d^2)*g*i
^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2*
d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2)) - ((b
*d*x + b*c)*log(b*x + a)^2 + (b*d*x + b*c)*log(d*x + c)^2 + 2*b*c - 2*a*d +
 2*(b*d*x + b*c)*log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a)
)*log(d*x + c))*A*B/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d^2*g*i^2 +
(b^2*c^2*d*g*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2)*x)
```

mupad [B] time = 6.28, size = 423, normalized size = 1.98

$$\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2\left(\frac{B\,b\,(A-B)}{g\,i^2\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}-\frac{B^2\,(a\,d-b\,c)}{b\,d\,g\,i^2\,\left(\frac{x}{b}+\frac{c}{b\,d}\right)\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}\right)-\frac{A^2-2\,A\,B\cdots}{(a\,d-b\,c)\,\left(c\,g\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)*(c*i + d*i*x)^2),
x)
```

```
[Out] log((e*(a + b*x))/(c + d*x))^2*((B*b*(A - B))/(g*i^2*(a^2*d^2 + b^2*c^2 - 2
*a*b*c*d)) - (B^2*(a*d - b*c))/(b*d*g*i^2*(x/b + c/(b*d))*(a^2*d^2 + b^2*c^
2 - 2*a*b*c*d))) - (A^2 + 2*B^2 - 2*A*B)/((a*d - b*c)*(c*g*i^2 + d*g*i^2*x)
) + (B^2*b*log((e*(a + b*x))/(c + d*x))^3)/(3*g*i^2*(a^2*d^2 + b^2*c^2 - 2*
a*b*c*d)) - (b*atan((b*(2*b*d*x + (a^2*d^2*g*i^2 - b^2*c^2*g*i^2)/(g*i^2*(a
*d - b*c)))*(A^2 + 2*B^2 - 2*A*B)*1i)/((a*d - b*c)*(A^2*b + 2*B^2*b - 2*A*B
*b)))*(A^2 + 2*B^2 - 2*A*B)*2i)/(g*i^2*(a*d - b*c)^2) - (2*B*log((e*(a + b*
x))/(c + d*x))*(A - B)*(a*d - b*c))/(b*d*g*i^2*(x/b + c/(b*d))*(a^2*d^2 + b
^2*c^2 - 2*a*b*c*d))
```

sympy [B] time = 6.19, size = 539, normalized size = 2.52

$$\frac{B^2 b\log\left(\frac{e(a+bx)}{c+dx}\right)^3}{3a^2d^2gi^2-6abcdgi^2+3b^2c^2gi^2}+\frac{\left(-2AB+2B^2\right)\log\left(\frac{e(a+bx)}{c+dx}\right)}{acdgi^2+ad^2gi^2x-bc^2gi^2-bcdgi^2x}+\left(A^2-2AB+2B^2\right)\left(-\frac{b\log\left(x+\frac{-\frac{a^3bd^3}{(ad-bc)\cdots}\cdots}{\cdots}\right)}{\cdots}\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)/(d*i*x+c*i)**2,x)
```

```
[Out] B**2*b*log(e*(a + b*x)/(c + d*x))**3/(3*a**2*d**2*g*i**2 - 6*a*b*c*d*g*i**2
 + 3*b**2*c**2*g*i**2) + (-2*A*B + 2*B**2)*log(e*(a + b*x)/(c + d*x))/(a*c*
d*g*i**2 + a*d**2*g*i**2*x - b*c**2*g*i**2 - b*c*d*g*i**2*x) + (A**2 - 2*A*
B + 2*B**2)*(-b*log(x + (-a**3*b*d**3/(a*d - b*c)**2 + 3*a**2*b**2*c*d**2/(
a*d - b*c)**2 - 3*a*b**3*c**2*d/(a*d - b*c)**2 + a*b*d + b**4*c**3/(a*d - b
*c)**2 + b**2*c)/(2*b**2*d))/(g*i**2*(a*d - b*c)**2) + b*log(x + (a**3*b*d*
*3/(a*d - b*c)**2 - 3*a**2*b**2*c*d**2/(a*d - b*c)**2 + 3*a*b**3*c**2*d/(a*
d - b*c)**2 + a*b*d - b**4*c**3/(a*d - b*c)**2 + b**2*c)/(2*b**2*d))/(g*i**
2*(a*d - b*c)**2) - 1/(a*c*d*g*i**2 - b*c**2*g*i**2 + x*(a*d**2*g*i**2 - b*
c*d*g*i**2))) + (A*B*b*c + A*B*b*d*x - B**2*a*d - B**2*b*d*x)*log(e*(a + b*
x)/(c + d*x))**2/(a**2*c*d**2*g*i**2 + a**2*d**3*g*i**2*x - 2*a*b*c**2*d*g*
i**2 - 2*a*b*c*d**2*g*i**2*x + b**2*c**3*g*i**2 + b**2*c**2*d*g*i**2*x)
```

3.97 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^2(ci+dix)^2}\,dx$

Optimal. Leaf size=365

$$-\frac{b^2(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{g^2i^2(a+bx)(bc-ad)^3}-\frac{2b^2B(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^2(a+bx)(bc-ad)^3}+\frac{d^2(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{g^2i^2(c+dx)(bc-ad)^3}-\frac{2\cdots}{g^2i^2(\cdots}$$

```
[Out] -2*A*B*d^2*(b*x+a)/(-a*d+b*c)^3/g^2/i^2/(d*x+c)+2*B^2*d^2*(b*x+a)/(-a*d+b*c
)^3/g^2/i^2/(d*x+c)-2*b^2*B^2*(d*x+c)/(-a*d+b*c)^3/g^2/i^2/(b*x+a)-2*B^2*d^
2*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-2*b^2*B*(d*x+c
)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^3/g^2/i^2/(b*x+a)+d^2*(b*x+a)*(A+B
*ln(e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-b^2*(d*x+c)*(A+B*ln(
e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^3/g^2/i^2/(b*x+a)-2/3*b*d*(A+B*ln(e*(b*x+a
)/(d*x+c)))^3/B/(-a*d+b*c)^3/g^2/i^2
```

Rubi [C] time = 7.18, antiderivative size = 1521, normalized size of antiderivative = 4.17, number of steps used = 113, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.738, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^2*(c*i + d*i*x)^2
),x]
```

```
[Out] (-2*b*B^2)/((b*c - a*d)^2*g^2*i^2*(a + b*x)) - (2*B^2*d)/((b*c - a*d)^2*g^2
*i^2*(c + d*x)) - (4*b*B^2*d*Log[a + b*x])/((b*c - a*d)^3*g^2*i^2) + (2*A*b
*B*d*Log[a + b*x]^2)/((b*c - a*d)^3*g^2*i^2) - (2*b*B^2*d*Log[a + b*x]*Log[
(c + d*x)^(-1)]^2)/((b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*Log[-((d*(a + b*x))
/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*
Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a
*d)^3*g^2*i^2) + (2*b*B^2*d*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/((
b*c - a*d)^3*g^2*i^2) - (2*b*B*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c
- a*d)^2*g^2*i^2*(a + b*x)) + (2*B*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/
((b*c - a*d)^2*g^2*i^2*(c + d*x)) - (b*(A + B*Log[(e*(a + b*x))/(c + d*x)])
^2)/((b*c - a*d)^2*g^2*i^2*(a + b*x)) - (d*(A + B*Log[(e*(a + b*x))/(c + d*
x)])^2)/((b*c - a*d)^2*g^2*i^2*(c + d*x)) - (2*b*d*Log[a + b*x]*(A + B*Log[
(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^3*g^2*i^2) + (4*b*B^2*d*Log[c + d
*x])/((b*c - a*d)^3*g^2*i^2) - (2*b*B^2*d*Log[a + b*x]^2*Log[c + d*x])/((b*
c - a*d)^3*g^2*i^2) - (4*A*b*B*d*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c +
d*x])/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*Log[a + b*x]*Log[(c + d*x)^(-1)]
*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (4*b*B^2*d*Log[-((d*(a + b*x))/(b*
c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x
)])*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (2*b*d*(A + B*Log[(e*(a + b*x))
/(c + d*x)])^2*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (2*A*b*B*d*Log[c + d
*x]^2)/((b*c - a*d)^3*g^2*i^2) - (2*b*B^2*d*Log[a + b*x]*Log[c + d*x]^2)/((
b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x
]^2)/((b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*Log[c + d*x]^3)/(3*(b*c - a*d)^3*
g^2*i^2) - (4*A*b*B*d*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c -
a*d)^3*g^2*i^2) + (2*b*B^2*d*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])
/((b*c - a*d)^3*g^2*i^2) - (4*A*b*B*d*PolyLog[2, -((d*(a + b*x))/(b*c - a*d
))])/((b*c - a*d)^3*g^2*i^2) + (4*b*B^2*d*Log[a + b*x]*PolyLog[2, -((d*(a +
 b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^2*i^2) - (4*A*b*B*d*PolyLog[2, (b*(c
 + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*Log[(c + d*x)^(
```

```
-1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) + (4*b*
B^2*d*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*P
olyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*
Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b
*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])
/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*PolyLog[3, (b*(c + d*x))/(b*c - a*d)]
)/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b
*x))])/((b*c - a*d)^3*g^2*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_.) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
```

```
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
```

```
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(97c+97dx)^2(ag+bgx)^2}\,dx = \int\left(\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc-ad)^2g^2(a+bx)^2} - \frac{2b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc-ad)^3g^2(a+bx)} + \frac{d^2\left(A+B\log\right.}{9409(bc-ad)}\right.$$

$$= -\frac{\left(2b^2d\right)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}dx}{9409(bc-ad)^3g^2} + \frac{\left(2bd^2\right)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}dx}{9409(bc-ad)^3g^2} + \frac{b^2\int\frac{\left(A+B\log\right.}{(a+l}}{9409(bc-}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc-ad)^2g^2(c+dx)} - \frac{2bd\log(a+bx)\left(A\right.}{9409(bc-}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc-ad)^2g^2(c+dx)} - \frac{2bd\log(a+bx)\left(A\right.}{9409(bc-}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc-ad)^2g^2(c+dx)} - \frac{2bd\log(a+bx)\left(A\right.}{9409(bc-}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9409(bc-ad)^2g^2(c+dx)} - \frac{2bd\log(a+bx)\left(A\right.}{9409(bc-}$$

$$= -\frac{2bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc-ad)^2g^2(a+bx)} + \frac{2Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc-ad)^2g^2(c+dx)} - \frac{b\left(A+B\log\left(\frac{e(a+l}{c+d}\right.\right.}{9409(bc-ad)^2g^2(a}$$

$$= -\frac{2bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc-ad)^2g^2(a+bx)} + \frac{2Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc-ad)^2g^2(c+dx)} - \frac{b\left(A+B\log\left(\frac{e(a+l}{c+d}\right.\right.}{9409(bc-ad)^2g^2(a}$$

$$= \frac{2bB^2d\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{9409(bc-ad)^3g^2} - \frac{2bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9409(bc-ad)^2g^2(a+bx)} + \frac{2Bd\left(A+B\log\right.}{9409(bc-ad)}$$

$$= -\frac{2bB^2}{9409(bc-ad)^2g^2(a+bx)} - \frac{2B^2d}{9409(bc-ad)^2g^2(c+dx)} - \frac{4bB^2d\log(a+bx)}{9409(bc-ad)^3g^2}$$

$$= -\frac{2bB^2}{9409(bc-ad)^2g^2(a+bx)} - \frac{2B^2d}{9409(bc-ad)^2g^2(c+dx)} - \frac{4bB^2d\log(a+bx)}{9409(bc-ad)^3g^2}$$

$$= -\frac{2bB^2}{9409(bc-ad)^2g^2(a+bx)} - \frac{2B^2d}{9409(bc-ad)^2g^2(c+dx)} - \frac{4bB^2d\log(a+bx)}{9409(bc-ad)^3g^2}$$

$$= -\frac{2bB^2}{9409(bc-ad)^2g^2(a+bx)} - \frac{2B^2d}{9409(bc-ad)^2g^2(c+dx)} - \frac{4bB^2d\log(a+bx)}{9409(bc-ad)^3g^2}$$

$$= -\frac{2bB^2}{9409(bc-ad)^2g^2(a+bx)} - \frac{2B^2d}{9409(bc-ad)^2g^2(c+dx)} - \frac{4bB^2d\log(a+bx)}{9409(bc-ad)^3g^2}$$

$$= -\frac{2bB^2}{9409(bc-ad)^2g^2(a+bx)} - \frac{2B^2d}{9409(bc-ad)^2g^2(c+dx)} - \frac{4bB^2d\log(a+bx)}{9409(bc-ad)^3g^2}$$

Mathematica [A] time = 1.10, size = 307, normalized size = 0.84

$$-\frac{3B\left(-a^2Bd^2+2abd(A(c+dx)-Bdx)+b^2(2Adx(c+dx)+Bc(c+2dx))\right)\log^2\left(\frac{e(a+bx)}{c+dx}\right)-3d\left(A^2-2AB+2B\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^2*(c*i + d*
i*x)^2),x]
```

```
[Out] -1/3*(-3*(A^2 - 2*A*B + 2*B^2)*d*(-(b*c) + a*d)*(a + b*x) + 3*b*(A^2 + 2*A*
B + 2*B^2)*(b*c - a*d)*(c + d*x) + 6*b*(A^2 + 2*B^2)*d*(a + b*x)*(c + d*x)*
Log[a + b*x] + 6*B*(b*c - a*d)*(A*b*c + b*B*c + a*A*d - a*B*d + 2*A*b*d*x)*
Log[(e*(a + b*x))/(c + d*x)] + 3*B*(-(a^2*B*d^2) + 2*a*b*d*(-(B*d*x) + A*(c
 + d*x)) + b^2*(2*A*d*x*(c + d*x) + B*c*(c + 2*d*x)))*Log[(e*(a + b*x))/(c
+ d*x)]^2 + 2*b*B^2*d*(a + b*x)*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]^3 -
6*b*(A^2 + 2*B^2)*d*(a + b*x)*(c + d*x)*Log[c + d*x])/((b*c - a*d)^3*g^2*i^
2*(a + b*x)*(c + d*x))
```

fricas [A] time = 0.92, size = 515, normalized size = 1.41

$$\frac{12\,ABabcd-3\left(A^2+2\,AB+2\,B^2\right)b^2c^2+3\left(A^2-2\,AB+2\,B^2\right)a^2d^2-2\left(B^2b^2d^2x^2+B^2abcd+\left(B^2b^2cd+B^2ab\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, alg
orithm="fricas")
```

```
[Out] 1/3*(12*A*B*a*b*c*d - 3*(A^2 + 2*A*B + 2*B^2)*b^2*c^2 + 3*(A^2 - 2*A*B + 2*
B^2)*a^2*d^2 - 2*(B^2*b^2*d^2*x^2 + B^2*a*b*c*d + (B^2*b^2*c*d + B^2*a*b*d^
2)*x)*log((b*e*x + a*e)/(d*x + c))^3 - 3*(2*A*B*b^2*d^2*x^2 + B^2*b^2*c^2 +
 2*A*B*a*b*c*d - B^2*a^2*d^2 + 2*((A*B + B^2)*b^2*c*d + (A*B - B^2)*a*b*d^2
)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 6*((A^2 + 2*B^2)*b^2*c*d - (A^2 + 2*B
^2)*a*b*d^2)*x - 6*((A^2 + 2*B^2)*b^2*d^2*x^2 + A^2*a*b*c*d + (A*B + B^2)*b
^2*c^2 - (A*B - B^2)*a^2*d^2 + ((A^2 + 2*A*B + 2*B^2)*b^2*c*d + (A^2 - 2*A*
B + 2*B^2)*a*b*d^2)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^4*c^3*d - 3*a*b^3*
c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*g^2*i^2*x^2 + (b^4*c^4 - 2*a*b^3*c^3
*d + 2*a^3*b*c*d^3 - a^4*d^4)*g^2*i^2*x + (a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*
a^3*b*c^2*d^2 - a^4*c*d^3)*g^2*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 2572, normalized size = 7.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)
```

```
[Out] 4*d^2/i^2/(a*d-b*c)^4/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b*c*a
+2*d*e/i^2/(a*d-b*c)^4/g^2*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*
ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+2*d^3/i^2/(a*d-b*c)^4/g^2*A*B/(d*x+c)*a^2
-2*e/i^2/(a*d-b*c)^4/g^2*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-
e/i^2/(a*d-b*c)^4/g^2*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-d/i
^2/(a*d-b*c)^4/g^2*A^2/(d*x+c)*b^2*c^2-2*d/i^2/(a*d-b*c)^4/g^2*B^2/(d*x+c)*
b^2*c^2-2*d/i^2/(a*d-b*c)^4/g^2*A^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2
*d^3/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+2/
3*d^2/i^2/(a*d-b*c)^4/g^2*B^2*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*a-2/3*d/i
^2/(a*d-b*c)^4/g^2*B^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*c+2*d^2/i^2/(a
*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a-2*d/i^2/(a*d-b*c)^4/g
^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-d^2/i^2/(a*d-b*c)^4/g^2*B^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*a+d/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d
-b*c)/(d*x+c)/d*e)^2*b^2*c+2*d^2/i^2/(a*d-b*c)^4/g^2*A^2*b*ln(b/d*e+(a*d-b*
c)/(d*x+c)/d*e)*a-d^3/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)^2/(d*x+c)*a^2-d^2/i^2/(a*d-b*c)^4/g^2*A^2*b*a+d/i^2/(a*d-b*c)^4/g^2*A^2*
b^2*c-2*d^2/i^2/(a*d-b*c)^4/g^2*B^2*b*a+2*d/i^2/(a*d-b*c)^4/g^2*B^2*b^2*c-d
^3/i^2/(a*d-b*c)^4/g^2*A^2/(d*x+c)*a^2-2*d^3/i^2/(a*d-b*c)^4/g^2*B^2/(d*x+c
)*a^2+d*e/i^2/(a*d-b*c)^4/g^2*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-2*d/i^2/(a*d-b*c)^4/g^2*A*B*ln(b/d*e
+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2-4*d^2/i^2/(a*d-b*c)^4/g^2*A*B/(d*x+
c)*a*b*c-4*d^2/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x
+c)*a*b*c+2*d^2/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(
d*x+c)*a*b*c-2*e/i^2/(a*d-b*c)^4/g^2*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2*d*e/i^2/(a*d-b*c)^4/g^2*B^2*b
^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
a-2*d/i^2/(a*d-b*c)^4/g^2*A*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+d*e/i
^2/(a*d-b*c)^4/g^2*A^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2*d*e/
i^2/(a*d-b*c)^4/g^2*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-2*e/i
^2/(a*d-b*c)^4/g^2*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+2*d^2/
i^2/(a*d-b*c)^4/g^2*A^2/(d*x+c)*a*b*c+4*d^2/i^2/(a*d-b*c)^4/g^2*B^2/(d*x+c)
*a*b*c-2*d^2/i^2/(a*d-b*c)^4/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a+2*
d/i^2/(a*d-b*c)^4/g^2*A*B/(d*x+c)*b^2*c^2+2*d^2/i^2/(a*d-b*c)^4/g^2*A*B*b*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-e/i^2/(a*d-b*c)^4/g^2*B^2*b^3/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-2*e/i^2/(
a*d-b*c)^4/g^2*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*
d-b*c)/(d*x+c)/d*e)*c+2*d/i^2/(a*d-b*c)^4/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*b^2*c-2*d^3/i^2/(a*d-b*c)^4/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/
(d*x+c)*a^2-d/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*
x+c)*b^2*c^2+2*d/i^2/(a*d-b*c)^4/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d
*x+c)*b^2*c^2+2*d^2/i^2/(a*d-b*c)^4/g^2*A*B*b*a-2*d/i^2/(a*d-b*c)^4/g^2*A*B
*b^2*c+2*d*e/i^2/(a*d-b*c)^4/g^2*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b
/d*e)*a
```

maxima [B] time = 2.61, size = 1995, normalized size = 5.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, alg
orithm="maxima")
```

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

```
*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2)
 - 2*b*d*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*
g^2*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 2/3*B^2*(3*(b^2*c^2 - 2*a*
b*c*d + a^2*d^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x +
 a)^2 + 2*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)*log(
d*x + c) - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(d*x + c)^2)*
log(b*e*x/(d*x + c) + a*e/(d*x + c))/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g
^2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 -
 3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2
 + (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d
^4*g^2*i^2)*x) + (3*b^2*c^2 - 3*a^2*d^2 + (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d
 + a*b*d^2)*x)*log(b*x + a)^3 + 3*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d
^2)*x)*log(b*x + a)*log(d*x + c)^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*
b*d^2)*x)*log(d*x + c)^3 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + a*b*c
*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a) - 3*(2*b^2*d^2*x^2 + 2*a*b*c*d + (
b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)^2 + 2*(b^2*c*d
+ a*b*d^2)*x)*log(d*x + c))/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^2*i^2 +
3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - 3*a*b^3*
c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 + (b^4*c
^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^4*g^2*i^
2)*x)) - A^2*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3
)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x +
 (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*log(b*x + a)/((b^
3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*d*log(d*x +
 c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2)) - 2*(b^2
*c^2 - 2*a*b*c*d + a^2*d^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x
)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*
x + a)*log(d*x + c) - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(d
*x + c)^2)*A*B/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^2*i^2 + 3*a^3*b*c^2*d
^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - 3*a*b^3*c^2*d^2*g^2*i
^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 + (b^4*c^4*g^2*i^2 -
2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^4*g^2*i^2)*x)
```

mupad [B] time = 7.20, size = 731, normalized size = 2.00

$$\frac{2\,B^2\,b\,d\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^3}{3\,g^2\,i^2\,(a\,d-b\,c)^3}-\frac{\frac{A^2\,a\,d+A^2\,b\,c+2\,B^2\,a\,d+2\,B^2\,b\,c-2\,A\,B\,a\,d+2\,A\,B\,b\,c}{a\,d-b\,c}+\frac{2\,x\,\left(b\,d\,A^2+2\,b\,d\,B^2\right)}{a\,d-b\,c}}{x\,\left(a^2\,d^2\,g^2\,i^2-b^2\,c^2\,g^2\,i^2\right)+x^2\,\left(a\,b\,d^2\,g^2\,i^2-b^2\,c\,d\,g^2\,i^2\right)-a\,b\,c^2\,g^2\,i^2+a^2\,c\,d\,g^2\,i^2}-\ln\Big(\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^2*(c*i + d*i*x)^2
),x)
```

```
[Out] (2*B^2*b*d*log((e*(a + b*x))/(c + d*x))^3)/(3*g^2*i^2*(a*d - b*c)^3) - ((A^
2*a*d + A^2*b*c + 2*B^2*a*d + 2*B^2*b*c - 2*A*B*a*d + 2*A*B*b*c)/(a*d - b*c
) + (2*x*(A^2*b*d + 2*B^2*b*d))/(a*d - b*c))/(x*(a^2*d^2*g^2*i^2 - b^2*c^2*
g^2*i^2) + x^2*(a*b*d^2*g^2*i^2 - b^2*c*d*g^2*i^2) - a*b*c^2*g^2*i^2 + a^2*
c*d*g^2*i^2) - (log((e*(a + b*x))/(c + d*x))*((2*(B^2*b*c - B^2*a*d + A*B*a
*d + A*B*b*c))/(g^2*i^2*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (4*A*B*x
)/(g^2*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))))/(x^2 + (x*(a*d + b*c))/(b*d)
+ (a*c)/(b*d)) - (b*d*atan((b*d*(A^2 + 2*B^2)*((a^3*d^3*g^2*i^2 + b^3*c^3*g
^2*i^2 - a*b^2*c^2*d*g^2*i^2 - a^2*b*c*d^2*g^2*i^2)/(a^2*d^2*g^2*i^2 + b^2*
c^2*g^2*i^2 - 2*a*b*c*d*g^2*i^2) + 2*b*d*x)*(a^2*d^2*g^2*i^2 + b^2*c^2*g^2*
i^2 - 2*a*b*c*d*g^2*i^2)*2i)/(g^2*i^2*(a*d - b*c)^3*(2*A^2*b*d + 4*B^2*b*d)
))*(A^2 + 2*B^2)*4i)/(g^2*i^2*(a*d - b*c)^3) - log((e*(a + b*x))/(c + d*x))
^2*(((B^2*(a*d + b*c))/(g^2*i^2*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) +
(2*B^2*x)/(g^2*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(x^2 + (x*(a*d + b*c))
/(b*d) + (a*c)/(b*d)) - (2*A*B*b*d)/(g^2*i^2*(a*d - b*c)^3))
```

sympy [B] time = 9.76, size = 1404, normalized size = 3.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**2/(d*i*x+c*i)**2,x)
```

```
[Out] 2*B**2*b*d*log(e*(a + b*x)/(c + d*x))**3/(3*a**3*d**3*g**2*i**2 - 9*a**2*b*
c*d**2*g**2*i**2 + 9*a*b**2*c**2*d*g**2*i**2 - 3*b**3*c**3*g**2*i**2) - 2*b
*d*(A**2 + 2*B**2)*log(x + (2*A**2*a*b*d**2 + 2*A**2*b**2*c*d + 4*B**2*a*b*
d**2 + 4*B**2*b**2*c*d - 2*a**4*b*d**5*(A**2 + 2*B**2)/(a*d - b*c)**3 + 8*a
**3*b**2*c*d**4*(A**2 + 2*B**2)/(a*d - b*c)**3 - 12*a**2*b**3*c**2*d**3*(A*
*2 + 2*B**2)/(a*d - b*c)**3 + 8*a*b**4*c**3*d**2*(A**2 + 2*B**2)/(a*d - b*c
)**3 - 2*b**5*c**4*d*(A**2 + 2*B**2)/(a*d - b*c)**3)/(4*A**2*b**2*d**2 + 8*
B**2*b**2*d**2))/(g**2*i**2*(a*d - b*c)**3) + 2*b*d*(A**2 + 2*B**2)*log(x +
 (2*A**2*a*b*d**2 + 2*A**2*b**2*c*d + 4*B**2*a*b*d**2 + 4*B**2*b**2*c*d + 2
*a**4*b*d**5*(A**2 + 2*B**2)/(a*d - b*c)**3 - 8*a**3*b**2*c*d**4*(A**2 + 2*
B**2)/(a*d - b*c)**3 + 12*a**2*b**3*c**2*d**3*(A**2 + 2*B**2)/(a*d - b*c)**
3 - 8*a*b**4*c**3*d**2*(A**2 + 2*B**2)/(a*d - b*c)**3 + 2*b**5*c**4*d*(A**2
 + 2*B**2)/(a*d - b*c)**3)/(4*A**2*b**2*d**2 + 8*B**2*b**2*d**2))/(g**2*i**
2*(a*d - b*c)**3) + (-2*A*B*a*d - 2*A*B*b*c - 4*A*B*b*d*x + 2*B**2*a*d - 2*
B**2*b*c)*log(e*(a + b*x)/(c + d*x))/(a**3*c*d**2*g**2*i**2 + a**3*d**3*g**
2*i**2*x - 2*a**2*b*c**2*d*g**2*i**2 - a**2*b*c*d**2*g**2*i**2*x + a**2*b*d
**3*g**2*i**2*x**2 + a*b**2*c**3*g**2*i**2 - a*b**2*c**2*d*g**2*i**2*x - 2*
a*b**2*c*d**2*g**2*i**2*x**2 + b**3*c**3*g**2*i**2*x + b**3*c**2*d*g**2*i**
2*x**2) + (2*A*B*a*b*c*d + 2*A*B*a*b*d**2*x + 2*A*B*b**2*c*d*x + 2*A*B*b**2
*d**2*x**2 - B**2*a**2*d**2 - 2*B**2*a*b*d**2*x + B**2*b**2*c**2 + 2*B**2*b
**2*c*d*x)*log(e*(a + b*x)/(c + d*x))**2/(a**4*c*d**3*g**2*i**2 + a**4*d**4
*g**2*i**2*x - 3*a**3*b*c**2*d**2*g**2*i**2 - 2*a**3*b*c*d**3*g**2*i**2*x +
 a**3*b*d**4*g**2*i**2*x**2 + 3*a**2*b**2*c**3*d*g**2*i**2 - 3*a**2*b**2*c*
d**3*g**2*i**2*x**2 - a*b**3*c**4*g**2*i**2 + 2*a*b**3*c**3*d*g**2*i**2*x +
 3*a*b**3*c**2*d**2*g**2*i**2*x**2 - b**4*c**4*g**2*i**2*x - b**4*c**3*d*g*
*2*i**2*x**2) - (A**2*a*d + A**2*b*c - 2*A*B*a*d + 2*A*B*b*c + 2*B**2*a*d +
 2*B**2*b*c + x*(2*A**2*b*d + 4*B**2*b*d))/(a**3*c*d**2*g**2*i**2 - 2*a**2*
b*c**2*d*g**2*i**2 + a*b**2*c**3*g**2*i**2 + x**2*(a**2*b*d**3*g**2*i**2 -
2*a*b**2*c*d**2*g**2*i**2 + b**3*c**2*d*g**2*i**2) + x*(a**3*d**3*g**2*i**2
 - a**2*b*c*d**2*g**2*i**2 - a*b**2*c**2*d*g**2*i**2 + b**3*c**3*g**2*i**2)
)
```

3.98 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3(ci+dix)^2}\,dx$

Optimal. Leaf size=523

$$-\frac{b^3(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2g^3i^2(a+bx)^2(bc-ad)^4}-\frac{b^3B(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^3i^2(a+bx)^2(bc-ad)^4}+\frac{3b^2d(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{g^3i^2(a+bx)(bc-ad)^4}+$$

```
[Out] 2*A*B*d^3*(b*x+a)/(-a*d+b*c)^4/g^3/i^2/(d*x+c)-2*B^2*d^3*(b*x+a)/(-a*d+b*c)
^4/g^3/i^2/(d*x+c)+6*b^2*B^2*d*(d*x+c)/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/4*b^3
*B^2*(d*x+c)^2/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2+2*B^2*d^3*(b*x+a)*ln(e*(b*x+a
)/(d*x+c))/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+6*b^2*B*d*(d*x+c)*(A+B*ln(e*(b*x+a)
/(d*x+c)))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/2*b^3*B*(d*x+c)^2*(A+B*ln(e*(b*x+
a)/(d*x+c)))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2-d^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(
d*x+c)))^2/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+3*b^2*d*(d*x+c)*(A+B*ln(e*(b*x+a)/(
d*x+c)))^2/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/2*b^3*(d*x+c)^2*(A+B*ln(e*(b*x+a)
/(d*x+c)))^2/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2+b*d^2*(A+B*ln(e*(b*x+a)/(d*x+c)
))^3/B/(-a*d+b*c)^4/g^3/i^2
```

Rubi [C] time = 8.46, antiderivative size = 2071, normalized size of antiderivative = 3.96, number of steps used = 143, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.738, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^3*(c*i + d*i*x)^2
),x]
```

```
[Out] -(b*B^2)/(4*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (11*b*B^2*d)/(2*(b*c - a*d
)^3*g^3*i^2*(a + b*x)) + (2*B^2*d^2)/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (1
5*b*B^2*d^2*Log[a + b*x])/(2*(b*c - a*d)^4*g^3*i^2) - (3*A*b*B*d^2*Log[a +
b*x]^2)/((b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*Log[a + b*x]^2)/(2*(b*c - a*
d)^4*g^3*i^2) + (3*b*B^2*d^2*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/((b*c - a*
d)^4*g^3*i^2) - (3*b*B^2*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x
)^(-1)]^2)/((b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*Log[-((b*c - a*d)/(d*(a +
 b*x)))]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^4*g^3*i^2) - (3*b*B^2
*d^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^4*g^3*i^2) -
 (b*B*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*(b*c - a*d)^2*g^3*i^2*(a + b
*x)^2) + (5*b*B*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^3*g^3*
i^2*(a + b*x)) - (2*B*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d
)^3*g^3*i^2*(c + d*x)) + (3*b*B*d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(
c + d*x)]))/((b*c - a*d)^4*g^3*i^2) - (b*(A + B*Log[(e*(a + b*x))/(c + d*x)
])^2)/(2*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (2*b*d*(A + B*Log[(e*(a + b*x
))/(c + d*x)])^2)/((b*c - a*d)^3*g^3*i^2*(a + b*x)) + (d^2*(A + B*Log[(e*(a
 + b*x))/(c + d*x)])^2)/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (3*b*d^2*Log[a
+ b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^4*g^3*i^2) - (1
5*b*B^2*d^2*Log[c + d*x])/(2*(b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*Log[a +
b*x]^2*Log[c + d*x])/((b*c - a*d)^4*g^3*i^2) + (6*A*b*B*d^2*Log[-((d*(a + b
*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*Log
[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^4*g^3*i^2) + (6*b
*B^2*d^2*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x])/((b*c - a*d)^4*g^3*
i^2) - (6*b*B^2*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(
c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*d)^4
*g^3*i^2) - (3*b*B*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(
```

```
(b*c - a*d)^4*g^3*i^2) - (3*b*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Lo
g[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*A*b*B*d^2*Log[c + d*x]^2)/((b*c -
a*d)^4*g^3*i^2) - (3*b*B^2*d^2*Log[c + d*x]^2)/(2*(b*c - a*d)^4*g^3*i^2) +
(3*b*B^2*d^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^4*g^3*i^2) - (3*b*B^
2*d^2*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/((b*c - a*d)^4*g^3*i^2)
- (b*B^2*d^2*Log[c + d*x]^3)/((b*c - a*d)^4*g^3*i^2) + (6*A*b*B*d^2*Log[a +
 b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^
2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) - (3
*b*B^2*d^2*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^
3*i^2) + (6*A*b*B*d^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d
)^4*g^3*i^2) + (3*b*B^2*d^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c
 - a*d)^4*g^3*i^2) - (6*b*B^2*d^2*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(
b*c - a*d))])/((b*c - a*d)^4*g^3*i^2) + (6*A*b*B*d^2*PolyLog[2, (b*(c + d*x
))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*PolyLog[2, (b*(c +
d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*Log[(c + d*x)^(-
1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) - (6*b*B
^2*d^2*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*
PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) + (6*b*B^2*d
^2*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/
((b*c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*
d))])/((b*c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*PolyLog[3, (b*(c + d*x))/(b*c
- a*d)])/((b*c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*PolyLog[3, 1 + (b*c - a*d)/
(d*(a + b*x))])/((b*c - a*d)^4*g^3*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
```

```
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(98c+98dx)^2(ag+bgx)^3}\,dx = \int \left(\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9604(bc-ad)^2g^3(a+bx)^3} - \frac{b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4802(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d^2\left(A+\right.}{9604(bc-}\right.$$

$$= \frac{\left(3b^2d^2\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}\,dx}{9604(bc-ad)^4g^3} - \frac{\left(3bd^3\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}\,dx}{9604(bc-ad)^4g^3} - \frac{\left(b^2d\right)\int \frac{\left(A\right.}{}}{4802(}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{19208(bc-ad)^2g^3(a+bx)^2} + \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4802(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+B\log\right.}{9604(bc-ad)^3}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{19208(bc-ad)^2g^3(a+bx)^2} + \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4802(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+B\log\right.}{9604(bc-ad)^3}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{19208(bc-ad)^2g^3(a+bx)^2} + \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4802(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+B\log\right.}{9604(bc-ad)^3}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{19208(bc-ad)^2g^3(a+bx)^2} + \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{4802(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+B\log\right.}{9604(bc-ad)^3}$$

$$= -\frac{bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{19208(bc-ad)^2g^3(a+bx)^2} + \frac{5bBd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9604(bc-ad)^3g^3(a+bx)} - \frac{Bd^2\left(A+B\,\mathrm{l}\right.}{4802(bc-ad}$$

$$= -\frac{bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{19208(bc-ad)^2g^3(a+bx)^2} + \frac{5bBd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{9604(bc-ad)^3g^3(a+bx)} - \frac{Bd^2\left(A+B\,\mathrm{l}\right.}{4802(bc-ad}$$

$$= -\frac{3bB^2d^2\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{9604(bc-ad)^4g^3} - \frac{bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{19208(bc-ad)^2g^3(a+bx)^2} + \frac{5bBd\left(\right.}{9604(}$$

$$= -\frac{bB^2}{38416(bc-ad)^2g^3(a+bx)^2} + \frac{11bB^2d}{19208(bc-ad)^3g^3(a+bx)} + \frac{B^2}{4802(bc-ad}$$

$$= -\frac{bB^2}{38416(bc-ad)^2g^3(a+bx)^2} + \frac{11bB^2d}{19208(bc-ad)^3g^3(a+bx)} + \frac{B^2}{4802(bc-ad}$$

$$= -\frac{bB^2}{38416(bc-ad)^2g^3(a+bx)^2} + \frac{11bB^2d}{19208(bc-ad)^3g^3(a+bx)} + \frac{B^2}{4802(bc-ad}$$

$$= -\frac{bB^2}{38416(bc-ad)^2g^3(a+bx)^2} + \frac{11bB^2d}{19208(bc-ad)^3g^3(a+bx)} + \frac{B^2}{4802(bc-ad}$$

$$= -\frac{bB^2}{38416(bc-ad)^2g^3(a+bx)^2} + \frac{11bB^2d}{19208(bc-ad)^3g^3(a+bx)} + \frac{B^2}{4802(bc-ad}$$

$$= -\frac{bB^2}{38416(bc-ad)^2g^3(a+bx)^2} + \frac{11bB^2d}{19208(bc-ad)^3g^3(a+bx)} + \frac{B^2}{4802(bc-ad}$$

Mathematica [A] time = 1.53, size = 466, normalized size = 0.89

$$-\frac{2B\left(2a^3Bd^3-6a^2bd^2(A(c+dx)-Bdx)-6ab^2d(2Adx(c+dx)+Bc(c+2dx))+b^3\left(B\left(c^3-3c^2dx-9cd^2x^2-3d\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^3*(c*i + d*
i*x)^2),x]
```

```
[Out] (4*(A^2 - 2*A*B + 2*B^2)*d^2*(b*c - a*d)*(a + b*x)^2 - b*(2*A^2 + 2*A*B + B
^2)*(b*c - a*d)^2*(c + d*x) + 2*b*(4*A^2 + 10*A*B + 11*B^2)*d*(b*c - a*d)*(
a + b*x)*(c + d*x) + 6*b*(2*A^2 + 2*A*B + 5*B^2)*d^2*(a + b*x)^2*(c + d*x)*
Log[a + b*x] + 2*B*(b*c - a*d)*(4*(A - B)*d^2*(a + b*x)^2 - b*(2*A + B)*(b*
c - a*d)*(c + d*x) + 2*b*(4*A + 5*B)*d*(a + b*x)*(c + d*x))*Log[(e*(a + b*x
))/(c + d*x)] - 2*B*(2*a^3*B*d^3 - 6*a^2*b*d^2*(-(B*d*x) + A*(c + d*x)) - 6
*a*b^2*d*(2*A*d*x*(c + d*x) + B*c*(c + 2*d*x)) + b^3*(-6*A*d^2*x^2*(c + d*x
) + B*(c^3 - 3*c^2*d*x - 9*c*d^2*x^2 - 3*d^3*x^3)))*Log[(e*(a + b*x))/(c +
d*x)]^2 + 4*b*B^2*d^2*(a + b*x)^2*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]^3
- 6*b*(2*A^2 + 2*A*B + 5*B^2)*d^2*(a + b*x)^2*(c + d*x)*Log[c + d*x])/(4*(b
*c - a*d)^4*g^3*i^2*(a + b*x)^2*(c + d*x))
```

fricas [A] time = 1.32, size = 1005, normalized size = 1.92

$$-\frac{\left(2A^2+2AB+B^2\right)b^3c^3-12\left(A^2+2AB+2B^2\right)ab^2c^2d+3\left(2A^2+10AB+5B^2\right)a^2bcd^2+4\left(A^2-2AB+2B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, alg
orithm="fricas")
```

```
[Out] -1/4*((2*A^2 + 2*A*B + B^2)*b^3*c^3 - 12*(A^2 + 2*A*B + 2*B^2)*a*b^2*c^2*d
+ 3*(2*A^2 + 10*A*B + 5*B^2)*a^2*b*c*d^2 + 4*(A^2 - 2*A*B + 2*B^2)*a^3*d^3
- 4*(B^2*b^3*d^3*x^3 + B^2*a^2*b*c*d^2 + (B^2*b^3*c*d^2 + 2*B^2*a*b^2*d^3)*
x^2 + (2*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c))^3
 - 6*((2*A^2 + 2*A*B + 5*B^2)*b^3*c*d^2 - (2*A^2 + 2*A*B + 5*B^2)*a*b^2*d^3
)*x^2 - 2*(3*(2*A*B + B^2)*b^3*d^3*x^3 - B^2*b^3*c^3 + 6*B^2*a*b^2*c^2*d +
6*A*B*a^2*b*c*d^2 - 2*B^2*a^3*d^3 + 3*(4*A*B*a*b^2*d^3 + (2*A*B + 3*B^2)*b^
3*c*d^2)*x^2 + 3*(B^2*b^3*c^2*d + 4*(A*B + B^2)*a*b^2*c*d^2 + 2*(A*B - B^2)
*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 3*((2*A^2 + 6*A*B + 7*B^2)*
b^3*c^2*d + 2*(2*A^2 - 2*A*B + 3*B^2)*a*b^2*c*d^2 - (6*A^2 + 2*A*B + 13*B^2
)*a^2*b*d^3)*x - 2*(3*(2*A^2 + 2*A*B + 5*B^2)*b^3*d^3*x^3 + 6*A^2*a^2*b*c*d
^2 - (2*A*B + B^2)*b^3*c^3 + 12*(A*B + B^2)*a*b^2*c^2*d - 4*(A*B - B^2)*a^3
*d^3 + 3*((2*A^2 + 6*A*B + 7*B^2)*b^3*c*d^2 + 4*(A^2 + 2*B^2)*a*b^2*d^3)*x^
2 + 3*((2*A*B + 3*B^2)*b^3*c^2*d + 4*(A^2 + 2*A*B + 2*B^2)*a*b^2*c*d^2 + 2*
(A^2 - 2*A*B + 2*B^2)*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^6*c^4
*d - 4*a*b^5*c^3*d^2 + 6*a^2*b^4*c^2*d^3 - 4*a^3*b^3*c*d^4 + a^4*b^2*d^5)*g
^3*i^2*x^3 + (b^6*c^5 - 2*a*b^5*c^4*d - 2*a^2*b^4*c^3*d^2 + 8*a^3*b^3*c^2*d
^3 - 7*a^4*b^2*c*d^4 + 2*a^5*b*d^5)*g^3*i^2*x^2 + (2*a*b^5*c^5 - 7*a^2*b^4*
c^4*d + 8*a^3*b^3*c^3*d^2 - 2*a^4*b^2*c^2*d^3 - 2*a^5*b*c*d^4 + a^6*d^5)*g^
3*i^2*x + (a^2*b^4*c^5 - 4*a^3*b^3*c^4*d + 6*a^4*b^2*c^3*d^2 - 4*a^5*b*c^2*
d^3 + a^6*c*d^4)*g^3*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.05, size = 3538, normalized size = 6.76

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)
```

```
[Out] 2*d^3/i^2/(a*d-b*c)^5/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*a*b
*c-4*d^3/i^2/(a*d-b*c)^5/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a*
b*c+4*d^3/i^2/(a*d-b*c)^5/g^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b
*c*a+6*d^2*e/i^2/(a*d-b*c)^5/g^3*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b
/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-d^3/i^2/(a*d-b*c)^5/g^3*A^2*b*a+d^2
/i^2/(a*d-b*c)^5/g^3*A^2*b^2*c-2*d^3/i^2/(a*d-b*c)^5/g^3*B^2*b*a+2*d^2/i^2/
(a*d-b*c)^5/g^3*B^2*b^2*c+d^3/i^2/(a*d-b*c)^5/g^3*B^2*b*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)^3*a-d^2/i^2/(a*d-b*c)^5/g^3*B^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)^3*c-d^3/i^2/(a*d-b*c)^5/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b*a
+d^2/i^2/(a*d-b*c)^5/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*c+3*d^3/
i^2/(a*d-b*c)^5/g^3*A^2*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-3*d^2/i^2/(a*d-
b*c)^5/g^3*A^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^4/i^2/(a*d-b*c)^5/g^
3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*a^2+2*d^4/i^2/(a*d-b*c)^5/g
^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2-d^4/i^2/(a*d-b*c)^5/g^3*
A^2/(d*x+c)*a^2-2*d^4/i^2/(a*d-b*c)^5/g^3*B^2/(d*x+c)*a^2+1/4*e^2/i^2/(a*d-
b*c)^5/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-2*d^2/i^2/(a
*d-b*c)^5/g^3*B^2/(d*x+c)*b^2*c^2+2*d^4/i^2/(a*d-b*c)^5/g^3*A*B/(d*x+c)*a^2
-2*d^2/i^2/(a*d-b*c)^5/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c+1/2*e^
2/i^2/(a*d-b*c)^5/g^3*A^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-d
^2/i^2/(a*d-b*c)^5/g^3*A^2/(d*x+c)*b^2*c^2+2*d^3/i^2/(a*d-b*c)^5/g^3*B^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a-4*d^3/i^2/(a*d-b*c)^5/g^3*A*B/(d*x+c)*b*c
*a-2*d^2/i^2/(a*d-b*c)^5/g^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^
2*c^2+3*d^2*e/i^2/(a*d-b*c)^5/g^3*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-3*d*e/i^2/(a*d-b*c)^5/g^3*B^2*b^
3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2
*c+6*d^2*e/i^2/(a*d-b*c)^5/g^3*B^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-1/2*d*e^2/i^2/(a*d-b*c)^5/g^3*B^2*b^3
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*
a-1/2*d*e^2/i^2/(a*d-b*c)^5/g^3*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/
d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-6*d*e/i^2/(a*d-b*c)^5/g^3*B^2*b^
3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c
-1/2*d*e^2/i^2/(a*d-b*c)^5/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^2*a-6*d*e/i^2/(a*d-b*c)^5/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)*c+6*d^2*e/i^2/(a*d-b*c)^5/g^3*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)*a-6*d*e/i^2/(a*d-b*c)^5/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/
d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d*e^2/i^2/(a*d-b*c)^5/g^3*A*B*
b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)*a+e^2/i^2/(a*d-b*c)^5/g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2*d^3/i^2/(a*d-b*c)^5/g^3*A*B*b*a-2*d
^2/i^2/(a*d-b*c)^5/g^3*A*B*b^2*c+2*d^2/i^2/(a*d-b*c)^5/g^3*A*B*ln(b/d*e+(a*
d-b*c)/(d*x+c)/d*e)*b^2*c+3*d^3/i^2/(a*d-b*c)^5/g^3*A*B*b*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)^2*a+2*d^3/i^2/(a*d-b*c)^5/g^3*A^2/(d*x+c)*a*b*c+2*d^2/i^2/(a
*d-b*c)^5/g^3*A*B/(d*x+c)*b^2*c^2+4*d^3/i^2/(a*d-b*c)^5/g^3*B^2/(d*x+c)*a*b
*c+1/2*e^2/i^2/(a*d-b*c)^5/g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^2*c+2*d^2/i^2/(a*d-b*c)^5/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+
c)*b^2*c^2+1/2*e^2/i^2/(a*d-b*c)^5/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c
/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-3*d^2/i^2/(a*d-b*c)^5/g^3*A
*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-2*d^3/i^2/(a*d-b*c)^5/g^3*A*B*ln
```

```
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b*a-6*d*e/i^2/(a*d-b*c)^5/g^3*B^2*b^3/(1/(d*x
+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+3*d^2*e/i^2/(a*d-b*c)^5/g^3*A^2*b^2/(1/(
d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-3*d*e/i^2/(a*d-b*c)^5/g^3*A^2*b^3/(1/
(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-1/2*d*e^2/i^2/(a*d-b*c)^5/g^3*A^2*b^
3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+6*d^2*e/i^2/(a*d-b*c)^5/g^3*B
^2*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-1/4*d*e^2/i^2/(a*d-b*c)^5/
g^3*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a+1/2*e^2/i^2/(a*d-b*
c)^5/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*
c)/(d*x+c)/d*e)^2*c-2*d^4/i^2/(a*d-b*c)^5/g^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)/(d*x+c)*a^2-d^2/i^2/(a*d-b*c)^5/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)^2/(d*x+c)*b^2*c^2
```

maxima [B] time = 4.89, size = 4187, normalized size = 8.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, alg
orithm="maxima")
```

```
[Out] 1/2*B^2*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*
a*b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*
g^3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3
- 2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2
*d^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d +
3*a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x + a)/((b^4*c^4 - 4*
a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d
^2*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d
^3 + a^4*d^4)*g^3*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 + A*B*((6*b^
2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*b*d^2)*x)/((
b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^3*i^2*x^3 +
(b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)
*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d^2 + a^4*b*c
*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^
2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d +
6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2*log(d*x + c
)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*
g^3*i^2))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 1/4*B^2*(2*(b^3*c^3 - 12*a
*b^2*c^2*d + 15*a^2*b*c*d^2 - 4*a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 6
*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^
2 + a^2*b*d^3)*x)*log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^
2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(d*x + c)^2 - 3*(3
*b^3*c^2*d - 2*a*b^2*c*d^2 - a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a^2*b*c*d^2 +
(b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a)
 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*
c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*
d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a))*log(d*x + c))*log(b
*e*x/(d*x + c) + a*e/(d*x + c))/(a^2*b^4*c^5*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*
i^2 + 6*a^4*b^2*c^3*d^2*g^3*i^2 - 4*a^5*b*c^2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i
^2 + (b^6*c^4*d*g^3*i^2 - 4*a*b^5*c^3*d^2*g^3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i
^2 - 4*a^3*b^3*c*d^4*g^3*i^2 + a^4*b^2*d^5*g^3*i^2)*x^3 + (b^6*c^5*g^3*i^2
- 2*a*b^5*c^4*d*g^3*i^2 - 2*a^2*b^4*c^3*d^2*g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3
*i^2 - 7*a^4*b^2*c*d^4*g^3*i^2 + 2*a^5*b*d^5*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^
3*i^2 - 7*a^2*b^4*c^4*d*g^3*i^2 + 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2
*d^3*g^3*i^2 - 2*a^5*b*c*d^4*g^3*i^2 + a^6*d^5*g^3*i^2)*x) + (b^3*c^3 - 24*
a*b^2*c^2*d + 15*a^2*b*c*d^2 + 8*a^3*d^3 - 4*(b^3*d^3*x^3 + a^2*b*c*d^2 + (
b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a)^
3 + 4*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2
*c*d^2 + a^2*b*d^3)*x)*log(d*x + c)^3 - 30*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 6*
(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2
```

```
 + a^2*b*d^3)*x)*log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2
 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*
b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*lo
g(b*x + a))*log(d*x + c)^2 - 3*(7*b^3*c^2*d + 6*a*b^2*c*d^2 - 13*a^2*b*d^3)
*x - 30*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b
^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a) + 6*(5*b^3*d^3*x^3 + 5*a^2*b*c*d^2 +
5*(b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2
 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a)^2 + 5*(2*
a*b^2*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*
a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a))*log(d*x + c))
/(a^2*b^4*c^5*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 + 6*a^4*b^2*c^3*d^2*g^3*i^2
 - 4*a^5*b*c^2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (b^6*c^4*d*g^3*i^2 - 4*a*b
^5*c^3*d^2*g^3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4*a^3*b^3*c*d^4*g^3*i^2 +
a^4*b^2*d^5*g^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*b^5*c^4*d*g^3*i^2 - 2*a^2
*b^4*c^3*d^2*g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 - 7*a^4*b^2*c*d^4*g^3*i^2
+ 2*a^5*b*d^5*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2 - 7*a^2*b^4*c^4*d*g^3*i^2
 + 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g^3*i^2 - 2*a^5*b*c*d^4*g^
3*i^2 + a^6*d^5*g^3*i^2)*x)) + 1/2*A^2*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*
d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 +
3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2
*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4 -
5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x + (a
^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*
d^2*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*
d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d +
6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2)) - 1/2*(b^3*c^3 - 12*
a*b^2*c^2*d + 15*a^2*b*c*d^2 - 4*a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 +
6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d
^2 + a^2*b*d^3)*x)*log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d
^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(d*x + c)^2 - 3*(
3*b^3*c^2*d - 2*a*b^2*c*d^2 - a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a^2*b*c*d^2 +
 (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a
) + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2
*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2
*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a))*log(d*x + c))*A*B/
(a^2*b^4*c^5*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 + 6*a^4*b^2*c^3*d^2*g^3*i^2
- 4*a^5*b*c^2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (b^6*c^4*d*g^3*i^2 - 4*a*b^
5*c^3*d^2*g^3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4*a^3*b^3*c*d^4*g^3*i^2 + a
^4*b^2*d^5*g^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*b^5*c^4*d*g^3*i^2 - 2*a^2*
b^4*c^3*d^2*g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 - 7*a^4*b^2*c*d^4*g^3*i^2 +
 2*a^5*b*d^5*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2 - 7*a^2*b^4*c^4*d*g^3*i^2
+ 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g^3*i^2 - 2*a^5*b*c*d^4*g^3
*i^2 + a^6*d^5*g^3*i^2)*x)
```

mupad [B] time = 11.47, size = 1497, normalized size = 2.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^3*(c*i + d*i*x)^2
),x)
```

```
[Out] (B^2*b*d^2*log((e*(a + b*x))/(c + d*x))^3)/(g^3*i^2*(a*d - b*c)^2*(a^2*d^2
+ b^2*c^2 - 2*a*b*c*d)) - ((4*A^2*a^2*d^2 - 2*A^2*b^2*c^2 + 8*B^2*a^2*d^2 -
 B^2*b^2*c^2 - 8*A*B*a^2*d^2 - 2*A*B*b^2*c^2 + 10*A^2*a*b*c*d + 23*B^2*a*b*
c*d + 22*A*B*a*b*c*d)/(2*(a*d - b*c)) + (3*x^2*(2*A^2*b^2*d^2 + 5*B^2*b^2*d
^2 + 2*A*B*b^2*d^2))/(a*d - b*c) + (3*x*(6*A^2*a*b*d^2 + 13*B^2*a*b*d^2 + 2
*A^2*b^2*c*d + 7*B^2*b^2*c*d + 2*A*B*a*b*d^2 + 6*A*B*b^2*c*d))/(2*(a*d - b*
c)))/(x*(2*a^4*d^3*g^3*i^2 + 4*a*b^3*c^3*g^3*i^2 - 6*a^2*b^2*c^2*d*g^3*i^2)
 + x^2*(2*b^4*c^3*g^3*i^2 + 4*a^3*b*d^3*g^3*i^2 - 6*a^2*b^2*c*d^2*g^3*i^2)
```

```
+ x^3*(2*a^2*b^2*d^3*g^3*i^2 + 2*b^4*c^2*d*g^3*i^2 - 4*a*b^3*c*d^2*g^3*i^2)
 + 2*a^2*b^2*c^3*g^3*i^2 + 2*a^4*c*d^2*g^3*i^2 - 4*a^3*b*c^2*d*g^3*i^2) - (
log((e*(a + b*x))/(c + d*x))*((B^2*b*c - 4*B^2*a*d + 4*A*B*a*d + 2*A*B*b*c)
/(2*g^3*i^2*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) - x*((3*(B^2 - 2*A*B))
/(2*g^3*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (3*B*(2*A + B)*(a*d + b*c))/
(g^3*i^2*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) + (3*B*a*c*(2*A + B)
)/(g^3*i^2*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (3*B*b*d*x^2*(2*A
 + B))/(g^3*i^2*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))))/(b*x^3 + (a^
2*c)/(b*d) + (x^2*(b^2*c + 2*a*b*d))/(b*d) + (x*(a^2*d + 2*a*b*c))/(b*d)) -
 (b*d^2*atan((b*d^2*(2*A^2 + 5*B^2 + 2*A*B)*(2*a^4*d^4*g^3*i^2 - 2*b^4*c^4*
g^3*i^2 + 4*a*b^3*c^3*d*g^3*i^2 - 4*a^3*b*c*d^3*g^3*i^2)*3i)/(2*g^3*i^2*(a*
d - b*c)^4*(6*A^2*b*d^2 + 15*B^2*b*d^2 + 6*A*B*b*d^2)) + (b^2*d^3*x*(2*A^2
+ 5*B^2 + 2*A*B)*(a^3*d^3*g^3*i^2 - b^3*c^3*g^3*i^2 + 3*a*b^2*c^2*d*g^3*i^2
 - 3*a^2*b*c*d^2*g^3*i^2)*6i)/(g^3*i^2*(a*d - b*c)^4*(6*A^2*b*d^2 + 15*B^2*
b*d^2 + 6*A*B*b*d^2)))*(2*A^2 + 5*B^2 + 2*A*B)*3i)/(g^3*i^2*(a*d - b*c)^4)
- log((e*(a + b*x))/(c + d*x))^2*((x*((3*B^2)/(2*g^3*i^2*(a^2*d^2 + b^2*c^2
 - 2*a*b*c*d)) + (3*B^2*(a*d + b*c))/(g^3*i^2*(a*d - b*c)*(a^2*d^2 + b^2*c^
2 - 2*a*b*c*d))) + (B^2*(2*a*d + b*c))/(2*g^3*i^2*(a^2*b*d^3 + b^3*c^2*d -
2*a*b^2*c*d^2)) + (3*B^2*a*c)/(g^3*i^2*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a
*b*c*d)) + (3*B^2*b*d*x^2)/(g^3*i^2*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*
c*d)))/(b*x^3 + (a^2*c)/(b*d) + (x^2*(b^2*c + 2*a*b*d))/(b*d) + (x*(a^2*d +
 2*a*b*c))/(b*d)) - (3*B*b*d^2*(2*A + B))/(2*g^3*i^2*(a*d - b*c)^2*(a^2*d^2
 + b^2*c^2 - 2*a*b*c*d)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**3/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.99 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^4(ci+dix)^2} dx$

Optimal. Leaf size=682

$$-\frac{b^4(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{3g^4i^2(a+bx)^3(bc-ad)^5}-\frac{2b^4B(c+dx)^3\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{9g^4i^2(a+bx)^3(bc-ad)^5}+\frac{2b^3d(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^4i^2(a+bx)^2(bc-ad)^5}$$

```
[Out] -2*A*B*d^4*(b*x+a)/(-a*d+b*c)^5/g^4/i^2/(d*x+c)+2*B^2*d^4*(b*x+a)/(-a*d+b*c
)^5/g^4/i^2/(d*x+c)-12*b^2*B^2*d^2*(d*x+c)/(-a*d+b*c)^5/g^4/i^2/(b*x+a)+b^3
*B^2*d*(d*x+c)^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-2/27*b^4*B^2*(d*x+c)^3/(-a*
d+b*c)^5/g^4/i^2/(b*x+a)^3-2*B^2*d^4*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/(-a*d+b*
c)^5/g^4/i^2/(d*x+c)-12*b^2*B*d^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d
+b*c)^5/g^4/i^2/(b*x+a)+2*b^3*B*d*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a
*d+b*c)^5/g^4/i^2/(b*x+a)^2-2/9*b^4*B*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))
/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3+d^4*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/(
-a*d+b*c)^5/g^4/i^2/(d*x+c)-6*b^2*d^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2
/(-a*d+b*c)^5/g^4/i^2/(b*x+a)+2*b^3*d*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))
^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-1/3*b^4*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+
c)))^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3-4/3*b*d^3*(A+B*ln(e*(b*x+a)/(d*x+c)))
^3/B/(-a*d+b*c)^5/g^4/i^2
```

Rubi [C] time = 9.48, antiderivative size = 2222, normalized size of antiderivative = 3.26, number of steps used = 177, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.738, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^4*(c*i + d*i*x)^2
),x]
```

```
[Out] (-2*b*B^2)/(27*(b*c - a*d)^2*g^4*i^2*(a + b*x)^3) + (7*b*B^2*d)/(9*(b*c - a
*d)^3*g^4*i^2*(a + b*x)^2) - (92*b*B^2*d^2)/(9*(b*c - a*d)^4*g^4*i^2*(a + b
*x)) - (2*B^2*d^3)/((b*c - a*d)^4*g^4*i^2*(c + d*x)) - (110*b*B^2*d^3*Log[a
 + b*x])/(9*(b*c - a*d)^5*g^4*i^2) + (4*A*b*B*d^3*Log[a + b*x]^2)/((b*c - a
*d)^5*g^4*i^2) + (10*b*B^2*d^3*Log[a + b*x]^2)/(3*(b*c - a*d)^5*g^4*i^2) -
(4*b*B^2*d^3*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)^5*g^4*i^2) +
(4*b*B^2*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/((b*c
 - a*d)^5*g^4*i^2) + (4*b*B^2*d^3*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[(e*
(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^5*g^4*i^2) + (4*b*B^2*d^3*Log[a + b*x
]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^5*g^4*i^2) - (2*b*B*(A + B*L
og[(e*(a + b*x))/(c + d*x)]))/(9*(b*c - a*d)^2*g^4*i^2*(a + b*x)^3) + (4*b*
B*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*(b*c - a*d)^3*g^4*i^2*(a + b*x
)^2) - (26*b*B*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*(b*c - a*d)^4*g
^4*i^2*(a + b*x)) + (2*B*d^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c -
a*d)^4*g^4*i^2*(c + d*x)) - (20*b*B*d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(3*(b*c - a*d)^5*g^4*i^2) - (b*(A + B*Log[(e*(a + b*x))/(c
+ d*x)])^2)/(3*(b*c - a*d)^2*g^4*i^2*(a + b*x)^3) + (b*d*(A + B*Log[(e*(a +
 b*x))/(c + d*x)])^2)/((b*c - a*d)^3*g^4*i^2*(a + b*x)^2) - (3*b*d^2*(A + B
*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^4*g^4*i^2*(a + b*x)) - (d^3*
(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^4*g^4*i^2*(c + d*x)) -
 (4*b*d^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)
^5*g^4*i^2) + (110*b*B^2*d^3*Log[c + d*x])/(9*(b*c - a*d)^5*g^4*i^2) - (4*b
*B^2*d^3*Log[a + b*x]^2*Log[c + d*x])/((b*c - a*d)^5*g^4*i^2) - (8*A*b*B*d^
```

```
3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^5*g^4*i^2) -
 (20*b*B^2*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*(b*c - a*
d)^5*g^4*i^2) - (8*b*B^2*d^3*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x])
/((b*c - a*d)^5*g^4*i^2) + (8*b*B^2*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*(
Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c +
d*x])/((b*c - a*d)^5*g^4*i^2) + (20*b*B*d^3*(A + B*Log[(e*(a + b*x))/(c + d
*x)])*Log[c + d*x])/(3*(b*c - a*d)^5*g^4*i^2) + (4*b*d^3*(A + B*Log[(e*(a +
 b*x))/(c + d*x)])^2*Log[c + d*x])/((b*c - a*d)^5*g^4*i^2) + (4*A*b*B*d^3*L
og[c + d*x]^2)/((b*c - a*d)^5*g^4*i^2) + (10*b*B^2*d^3*Log[c + d*x]^2)/(3*(
b*c - a*d)^5*g^4*i^2) - (4*b*B^2*d^3*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a
*d)^5*g^4*i^2) + (4*b*B^2*d^3*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/
((b*c - a*d)^5*g^4*i^2) + (4*b*B^2*d^3*Log[c + d*x]^3)/(3*(b*c - a*d)^5*g^4
*i^2) - (8*A*b*B*d^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a
*d)^5*g^4*i^2) - (20*b*B^2*d^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])
/(3*(b*c - a*d)^5*g^4*i^2) + (4*b*B^2*d^3*Log[a + b*x]^2*Log[(b*(c + d*x))/
(b*c - a*d)])/((b*c - a*d)^5*g^4*i^2) - (8*A*b*B*d^3*PolyLog[2, -((d*(a + b
*x))/(b*c - a*d))])/((b*c - a*d)^5*g^4*i^2) - (20*b*B^2*d^3*PolyLog[2, -((d
*(a + b*x))/(b*c - a*d))])/(3*(b*c - a*d)^5*g^4*i^2) + (8*b*B^2*d^3*Log[a +
 b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^5*g^4*i^2) - (
8*A*b*B*d^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^4*i^2)
- (20*b*B^2*d^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(3*(b*c - a*d)^5*g^4
*i^2) - (8*b*B^2*d^3*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*
d)])/((b*c - a*d)^5*g^4*i^2) + (8*b*B^2*d^3*(Log[a + b*x] + Log[(c + d*x)^(
-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])
/((b*c - a*d)^5*g^4*i^2) - (8*b*B^2*d^3*Log[(e*(a + b*x))/(c + d*x)]*PolyLo
g[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^5*g^4*i^2) - (8*b*B^2*d^3
*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^5*g^4*i^2) - (8*b*B
^2*d^3*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^4*i^2) - (8*
b*B^2*d^3*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^5*g^4*i^2
)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
```

```
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
```

```
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(99c+99dx)^2(ag+bgx)^4}\,dx = \int\left(\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc-ad)^2g^4(a+bx)^4} - \frac{2b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc-ad)^3g^4(a+bx)^3} + \frac{b^2d^2\left(A+\right.}{3267(bc-}\right.$$

$$= -\frac{\left(4b^2d^3\right)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}\,dx}{9801(bc-ad)^5g^4} + \frac{\left(4bd^4\right)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}\,dx}{9801(bc-ad)^5g^4} + \frac{\left(b^2d^2\right)\int}{326}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{29403(bc-ad)^2g^4(a+bx)^3} + \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc-ad)^3g^4(a+bx)^2} - \frac{bd^2\left(A+B\log\right.}{3267(bc-ad}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{29403(bc-ad)^2g^4(a+bx)^3} + \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc-ad)^3g^4(a+bx)^2} - \frac{bd^2\left(A+B\log\right.}{3267(bc-ad}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{29403(bc-ad)^2g^4(a+bx)^3} + \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc-ad)^3g^4(a+bx)^2} - \frac{bd^2\left(A+B\log\right.}{3267(bc-ad}$$

$$= -\frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{29403(bc-ad)^2g^4(a+bx)^3} + \frac{bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{9801(bc-ad)^3g^4(a+bx)^2} - \frac{bd^2\left(A+B\log\right.}{3267(bc-ad}$$

$$= -\frac{2bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{88209(bc-ad)^2g^4(a+bx)^3} + \frac{4bBd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{29403(bc-ad)^3g^4(a+bx)^2} - \frac{26bBd^2\left(A\right.}{29403(bc-}$$

$$= -\frac{2bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{88209(bc-ad)^2g^4(a+bx)^3} + \frac{4bBd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{29403(bc-ad)^3g^4(a+bx)^2} - \frac{26bBd^2\left(A\right.}{29403(bc-}$$

$$= \frac{4bB^2d^3\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{9801(bc-ad)^5g^4} - \frac{2bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{88209(bc-ad)^2g^4(a+bx)^3} + \frac{4bBd\left(\right.}{29403(b}$$

$$= -\frac{2bB^2}{264627(bc-ad)^2g^4(a+bx)^3} + \frac{7bB^2d}{88209(bc-ad)^3g^4(a+bx)^2} - \frac{92}{88209(bc-}$$

$$= -\frac{2bB^2}{264627(bc-ad)^2g^4(a+bx)^3} + \frac{7bB^2d}{88209(bc-ad)^3g^4(a+bx)^2} - \frac{92}{88209(bc-}$$

$$= -\frac{2bB^2}{264627(bc-ad)^2g^4(a+bx)^3} + \frac{7bB^2d}{88209(bc-ad)^3g^4(a+bx)^2} - \frac{92}{88209(bc-}$$

$$= -\frac{2bB^2}{264627(bc-ad)^2g^4(a+bx)^3} + \frac{7bB^2d}{88209(bc-ad)^3g^4(a+bx)^2} - \frac{92}{88209(bc-}$$

$$= -\frac{2bB^2}{264627(bc-ad)^2g^4(a+bx)^3} + \frac{7bB^2d}{88209(bc-ad)^3g^4(a+bx)^2} - \frac{92}{88209(bc-}$$

$$= -\frac{2bB^2}{264627(bc-ad)^2g^4(a+bx)^3} + \frac{7bB^2d}{88209(bc-ad)^3g^4(a+bx)^2} - \frac{92}{88209(bc-}$$

Mathematica [A] time = 2.25, size = 613, normalized size = 0.90

$$-\frac{9B\left(-3a^4Bd^4+12a^3bd^3(A(c+dx)-Bdx)+18a^2b^2d^2(2Adx(c+dx)+Bc(c+2dx))+6ab^3d\left(6Ad^2x^2(c+dx)+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^4*(c*i + d*
i*x)^2),x]
```

```
[Out] -1/27*(-27*(A^2 - 2*A*B + 2*B^2)*d^3*(-(b*c) + a*d)*(a + b*x)^3 + b*(9*A^2
+ 6*A*B + 2*B^2)*(b*c - a*d)^3*(c + d*x) - 3*b*(9*A^2 + 12*A*B + 7*B^2)*d*(
b*c - a*d)^2*(a + b*x)*(c + d*x) + 3*b*(27*A^2 + 78*A*B + 92*B^2)*d^2*(b*c
- a*d)*(a + b*x)^2*(c + d*x) + 6*b*(18*A^2 + 30*A*B + 55*B^2)*d^3*(a + b*x)
^3*(c + d*x)*Log[a + b*x] + 6*B*(b*c - a*d)*(9*(A - B)*d^3*(a + b*x)^3 + b*
(3*A + B)*(b*c - a*d)^2*(c + d*x) - 3*b*(3*A + 2*B)*d*(b*c - a*d)*(a + b*x)
*(c + d*x) + 3*b*(9*A + 13*B)*d^2*(a + b*x)^2*(c + d*x))*Log[(e*(a + b*x))/
(c + d*x)] + 9*B*(-3*a^4*B*d^4 + 12*a^3*b*d^3*(-(B*d*x) + A*(c + d*x)) + 18
*a^2*b^2*d^2*(2*A*d*x*(c + d*x) + B*c*(c + 2*d*x)) + 6*a*b^3*d*(6*A*d^2*x^2
*(c + d*x) + B*(-c^3 + 3*c^2*d*x + 9*c*d^2*x^2 + 3*d^3*x^3)) + b^4*(12*A*d^
3*x^3*(c + d*x) + B*(c^4 - 2*c^3*d*x + 6*c^2*d^2*x^2 + 22*c*d^3*x^3 + 10*d^
4*x^4)))*Log[(e*(a + b*x))/(c + d*x)]^2 + 36*b*B^2*d^3*(a + b*x)^3*(c + d*x
)*Log[(e*(a + b*x))/(c + d*x)]^3 - 6*b*(18*A^2 + 30*A*B + 55*B^2)*d^3*(a +
b*x)^3*(c + d*x)*Log[c + d*x])/((b*c - a*d)^5*g^4*i^2*(a + b*x)^3*(c + d*x)
)
```

fricas [B] time = 1.00, size = 1534, normalized size = 2.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, alg
orithm="fricas")
```

```
[Out] -1/27*((9*A^2 + 6*A*B + 2*B^2)*b^4*c^4 - 27*(2*A^2 + 2*A*B + B^2)*a*b^3*c^3
*d + 162*(A^2 + 2*A*B + 2*B^2)*a^2*b^2*c^2*d^2 - 5*(18*A^2 + 66*A*B + 49*B^
2)*a^3*b*c*d^3 - 27*(A^2 - 2*A*B + 2*B^2)*a^4*d^4 + 6*((18*A^2 + 30*A*B + 5
5*B^2)*b^4*c*d^3 - (18*A^2 + 30*A*B + 55*B^2)*a*b^3*d^4)*x^3 + 36*(B^2*b^4*
d^4*x^4 + B^2*a^3*b*c*d^3 + (B^2*b^4*c*d^3 + 3*B^2*a*b^3*d^4)*x^3 + 3*(B^2*
a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*x^2 + (3*B^2*a^2*b^2*c*d^3 + B^2*a^3*b*d^4)*
x)*log((b*e*x + a*e)/(d*x + c))^3 + 3*((18*A^2 + 66*A*B + 85*B^2)*b^4*c^2*d
^2 + 8*(9*A^2 + 6*A*B + 20*B^2)*a*b^3*c*d^3 - (90*A^2 + 114*A*B + 245*B^2)*
a^2*b^2*d^4)*x^2 + 9*(2*(6*A*B + 5*B^2)*b^4*d^4*x^4 + B^2*b^4*c^4 - 6*B^2*a
*b^3*c^3*d + 18*B^2*a^2*b^2*c^2*d^2 + 12*A*B*a^3*b*c*d^3 - 3*B^2*a^4*d^4 +
2*((6*A*B + 11*B^2)*b^4*c*d^3 + 9*(2*A*B + B^2)*a*b^3*d^4)*x^3 + 6*(B^2*b^4
*c^2*d^2 + 6*A*B*a^2*b^2*d^4 + 3*(2*A*B + 3*B^2)*a*b^3*c*d^3)*x^2 - 2*(B^2*
b^4*c^3*d - 9*B^2*a*b^3*c^2*d^2 - 18*(A*B + B^2)*a^2*b^2*c*d^3 - 6*(A*B - B
^2)*a^3*b*d^4)*x)*log((b*e*x + a*e)/(d*x + c))^2 - ((18*A^2 + 30*A*B + 19*B
^2)*b^4*c^3*d - 81*(2*A^2 + 6*A*B + 7*B^2)*a*b^3*c^2*d^2 - 3*(18*A^2 - 114*
A*B - 29*B^2)*a^2*b^2*c*d^3 + (198*A^2 + 114*A*B + 461*B^2)*a^3*b*d^4)*x +
6*((18*A^2 + 30*A*B + 55*B^2)*b^4*d^4*x^4 + 18*A^2*a^3*b*c*d^3 + (3*A*B + B
^2)*b^4*c^4 - 9*(2*A*B + B^2)*a*b^3*c^3*d + 54*(A*B + B^2)*a^2*b^2*c^2*d^2
- 9*(A*B - B^2)*a^4*d^4 + ((18*A^2 + 66*A*B + 85*B^2)*b^4*c*d^3 + 27*(2*A^2
 + 2*A*B + 5*B^2)*a*b^3*d^4)*x^3 + 3*((6*A*B + 11*B^2)*b^4*c^2*d^2 + 9*(2*A
^2 + 6*A*B + 7*B^2)*a*b^3*c*d^3 + 18*(A^2 + 2*B^2)*a^2*b^2*d^4)*x^2 - ((6*A
*B + 5*B^2)*b^4*c^3*d - 27*(2*A*B + 3*B^2)*a*b^3*c^2*d^2 - 54*(A^2 + 2*A*B
+ 2*B^2)*a^2*b^2*c*d^3 - 18*(A^2 - 2*A*B + 2*B^2)*a^3*b*d^4)*x)*log((b*e*x
+ a*e)/(d*x + c)))/((b^8*c^5*d - 5*a*b^7*c^4*d^2 + 10*a^2*b^6*c^3*d^3 - 10*
a^3*b^5*c^2*d^4 + 5*a^4*b^4*c*d^5 - a^5*b^3*d^6)*g^4*i^2*x^4 + (b^8*c^6 - 2
```

```
*a*b^7*c^5*d - 5*a^2*b^6*c^4*d^2 + 20*a^3*b^5*c^3*d^3 - 25*a^4*b^4*c^2*d^4
+ 14*a^5*b^3*c*d^5 - 3*a^6*b^2*d^6)*g^4*i^2*x^3 + 3*(a*b^7*c^6 - 4*a^2*b^6*
c^5*d + 5*a^3*b^5*c^4*d^2 - 5*a^5*b^3*c^2*d^4 + 4*a^6*b^2*c*d^5 - a^7*b*d^6
)*g^4*i^2*x^2 + (3*a^2*b^6*c^6 - 14*a^3*b^5*c^5*d + 25*a^4*b^4*c^4*d^2 - 20
*a^5*b^3*c^3*d^3 + 5*a^6*b^2*c^2*d^4 + 2*a^7*b*c*d^5 - a^8*d^6)*g^4*i^2*x +
 (a^3*b^5*c^6 - 5*a^4*b^4*c^5*d + 10*a^5*b^3*c^4*d^2 - 10*a^6*b^2*c^3*d^3 +
 5*a^7*b*c^2*d^4 - a^8*c*d^5)*g^4*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 4487, normalized size = 6.58

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)
```

```
[Out] -2*d^5/i^2/(a*d-b*c)^6/g^4*B^2/(d*x+c)*a^2-d^5/i^2/(a*d-b*c)^6/g^4*A^2/(d*x
+c)*a^2+2*d^3/i^2/(a*d-b*c)^6/g^4*B^2*b^2*c-2*d^4/i^2/(a*d-b*c)^6/g^4*B^2*b
*a+d^3/i^2/(a*d-b*c)^6/g^4*A^2*b^2*c-d^4/i^2/(a*d-b*c)^6/g^4*A^2*b*a-12*d^2
*e/i^2/(a*d-b*c)^6/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2/3*d*e^3/i^2/(a*d-b*c)^6/g^4*A*B*b^4/(1/(d*x
+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+4*d^4/
i^2/(a*d-b*c)^6/g^4*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b*c*a-4*d^2
*e^2/i^2/(a*d-b*c)^6/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*
ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+12*d^3*e/i^2/(a*d-b*c)^6/g^4*A*B*b^2/(1/(
d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-4*d^4
/i^2/(a*d-b*c)^6/g^4*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b*c*a-2*d^
3/i^2/(a*d-b*c)^6/g^4*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+2
*d^4/i^2/(a*d-b*c)^6/g^4*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*b*c*
a+2*d*e^2/i^2/(a*d-b*c)^6/g^4*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+6*d^3*e/i^2/(a*d-b*c)^6/g^4*B^2*b^
2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2
*a-6*d^2*e/i^2/(a*d-b*c)^6/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+12*d^3*e/i^2/(a*d-b*c)^6/g^4*B^2*b^
2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a
-12*d^2*e/i^2/(a*d-b*c)^6/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*
e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-2/3*e^3/i^2/(a*d-b*c)^6/g^4*A*B*b^5/(1
/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+1
/3*d*e^3/i^2/(a*d-b*c)^6/g^4*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+2/9*d*e^3/i^2/(a*d-b*c)^6/g^4*B^2*b
^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)*a-2*d^2*e^2/i^2/(a*d-b*c)^6/g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-2*d^2*e^2/i^2/(a*d-b*c)^6/g^4*
B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*a+2*d*e^2/i^2/(a*d-b*c)^6/g^4*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+4*d*e^2/i^2/(a*d-b*c)^6/g^4*A
*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)*c+4/3*d^4/i^2/(a*d-b*c)^6/g^4*B^2*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3
*a+2*d^5/i^2/(a*d-b*c)^6/g^4*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^
2-4/3*d^3/i^2/(a*d-b*c)^6/g^4*B^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*c+d
```

```
^3/i^2/(a*d-b*c)^6/g^4*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*c-1/3*e^3/
i^2/(a*d-b*c)^6/g^4*A^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*c-2*d
^3/i^2/(a*d-b*c)^6/g^4*B^2/(d*x+c)*b^2*c^2+2*d^5/i^2/(a*d-b*c)^6/g^4*A*B/(d
*x+c)*a^2-d^3/i^2/(a*d-b*c)^6/g^4*A^2/(d*x+c)*b^2*c^2-2*d^3/i^2/(a*d-b*c)^6
/g^4*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c-4*d^3/i^2/(a*d-b*c)^6/g^4*A^
2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-d^4/i^2/(a*d-b*c)^6/g^4*B^2*ln(b/d*
e+(a*d-b*c)/(d*x+c)/d*e)^2*b*a+4*d^4/i^2/(a*d-b*c)^6/g^4*A^2*b*ln(b/d*e+(a*
d-b*c)/(d*x+c)/d*e)*a+2*d^4/i^2/(a*d-b*c)^6/g^4*B^2*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)*b*a-d^5/i^2/(a*d-b*c)^6/g^4*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/
(d*x+c)*a^2-2/27*e^3/i^2/(a*d-b*c)^6/g^4*B^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b
*c/d*e+b/d*e)^3*c+2*d^4/i^2/(a*d-b*c)^6/g^4*A*B*b*a-2*d^3/i^2/(a*d-b*c)^6/g
^4*A*B*b^2*c-2*d^2*e^2/i^2/(a*d-b*c)^6/g^4*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)
*b*c/d*e+b/d*e)^2*a-2*d^4/i^2/(a*d-b*c)^6/g^4*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*b*a-1/3*e^3/i^2/(a*d-b*c)^6/g^4*B^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c
/d*e+b/d*e)^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-d^2*e^2/i^2/(a*d-b*c)^6/g
^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*a-4*d^3/i^2/(a*d-b*c)^
6/g^4*A*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-d^3/i^2/(a*d-b*c)^6/g^4*B
^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)*b^2*c^2+2*d^3/i^2/(a*d-b*c)^6/
g^4*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*b^2*c^2+2*d^4/i^2/(a*d-b*c)
^6/g^4*A^2/(d*x+c)*a*b*c+2/9*d*e^3/i^2/(a*d-b*c)^6/g^4*A*B*b^4/(1/(d*x+c)*a
*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a-4*d^4/i^2/(a*d-b*c)^6/g^4*A*B/(d*x+c)*b*c*a
-2*d^2*e^2/i^2/(a*d-b*c)^6/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d
*e)^2*a+2*d*e^2/i^2/(a*d-b*c)^6/g^4*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*
e+b/d*e)^2*c+12*d^3*e/i^2/(a*d-b*c)^6/g^4*A*B*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*
b*c/d*e+b/d*e)*a-12*d^2*e/i^2/(a*d-b*c)^6/g^4*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x
+c)*b*c/d*e+b/d*e)*c+2*d^3/i^2/(a*d-b*c)^6/g^4*A*B/(d*x+c)*b^2*c^2-2/9*e^3/
i^2/(a*d-b*c)^6/g^4*B^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*ln(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)*c+d*e^2/i^2/(a*d-b*c)^6/g^4*B^2*b^4/(1/(d*x+c)*a
*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+12*d^3*e/i^2/(a*d-b*c)^6/g^4*B^2*b^2/(1/(d*
x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+2/27*d*e^3/i^2/(a*d-b*c)^6/g^4*B^2*b^4/
(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+6*d^3*e/i^2/(a*d-b*c)^6/g^4*A^2
*b^2/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-6*d^2*e/i^2/(a*d-b*c)^6/g^4*
A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-12*d^2*e/i^2/(a*d-b*c)^6/
g^4*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+4*d^4/i^2/(a*d-b*c)^6
/g^4*A*B*b*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-2*d^5/i^2/(a*d-b*c)^6/g^4*A*
B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)*a^2+2*d^3/i^2/(a*d-b*c)^6/g^4*A*B
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*c+1/3*d*e^3/i^2/(a*d-b*c)^6/g^4*A^2*b^
4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^3*a+2*d*e^2/i^2/(a*d-b*c)^6/g^4*A
^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c+4*d^4/i^2/(a*d-b*c)^6/g^
4*B^2/(d*x+c)*a*b*c-2/9*e^3/i^2/(a*d-b*c)^6/g^4*A*B*b^5/(1/(d*x+c)*a*e-1/(d
*x+c)*b*c/d*e+b/d*e)^3*c
```

maxima [B] time = 7.92, size = 6160, normalized size = 9.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, alg
orithm="maxima")
```

```
[Out] -1/3*B^2*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c*d^2 + 3*a^
3*d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2*c*d^2 - 11
*a^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4*a^3*b^
4*c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2*b^5*c^3
*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^4*i^2*x^3 +
 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*c^2*d^3 - 3
*a^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^3*b^4*c^4*d
 + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^5)*g^4*i^2*
x + (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2*d^3 +
a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*
```

a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2) -
12*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a
^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2))*log(b*e*x/(d*x + c) + a
*e/(d*x + c))^2 - 2/3*A*B*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a
^2*b*c*d^2 + 3*a^3*d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8
*a*b^2*c*d^2 - 11*a^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c
^2*d^3 - 4*a^3*b^4*c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*
d - 6*a^2*b^5*c^3*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d
^5)*g^4*i^2*x^3 + 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^
4*b^3*c^2*d^3 - 3*a^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 -
 11*a^3*b^4*c^4*d + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 +
a^7*d^5)*g^4*i^2*x + (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4
*a^6*b*c^2*d^3 + a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*
a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5
*d^5)*g^4*i^2) - 12*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b
^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2))*log(b*
e*x/(d*x + c) + a*e/(d*x + c)) - 1/27*B^2*(6*(b^4*c^4 - 9*a*b^3*c^3*d + 54*
a^2*b^2*c^2*d^2 - 55*a^3*b*c*d^3 + 9*a^4*d^4 + 30*(b^4*c*d^3 - a*b^3*d^4)*x
^3 + 3*(11*b^4*c^2*d^2 + 8*a*b^3*c*d^3 - 19*a^2*b^2*d^4)*x^2 - 18*(b^4*d^4*
x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^
2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a)^2 - 18*(b^4*d^4*
x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^
2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(d*x + c)^2 - (5*b^4*c^3*d
 - 81*a*b^3*c^2*d^2 + 57*a^2*b^2*c*d^3 + 19*a^3*b*d^4)*x + 30*(b^4*d^4*x^4
+ a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^
4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a) - 6*(5*b^4*d^4*x^4 +
 5*a^3*b*c*d^3 + 5*(b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 15*(a*b^3*c*d^3 + a^2*b^
2*d^4)*x^2 + 5*(3*a^2*b^2*c*d^3 + a^3*b*d^4)*x - 6*(b^4*d^4*x^4 + a^3*b*c*d
^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3
*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a))*log(d*x + c))*log(b*e*x/(d*x +
 c) + a*e/(d*x + c))/(a^3*b^5*c^6*g^4*i^2 - 5*a^4*b^4*c^5*d*g^4*i^2 + 10*a^
5*b^3*c^4*d^2*g^4*i^2 - 10*a^6*b^2*c^3*d^3*g^4*i^2 + 5*a^7*b*c^2*d^4*g^4*i^
2 - a^8*c*d^5*g^4*i^2 + (b^8*c^5*d*g^4*i^2 - 5*a*b^7*c^4*d^2*g^4*i^2 + 10*a
^2*b^6*c^3*d^3*g^4*i^2 - 10*a^3*b^5*c^2*d^4*g^4*i^2 + 5*a^4*b^4*c*d^5*g^4*i
^2 - a^5*b^3*d^6*g^4*i^2)*x^4 + (b^8*c^6*g^4*i^2 - 2*a*b^7*c^5*d*g^4*i^2 -
5*a^2*b^6*c^4*d^2*g^4*i^2 + 20*a^3*b^5*c^3*d^3*g^4*i^2 - 25*a^4*b^4*c^2*d^4
*g^4*i^2 + 14*a^5*b^3*c*d^5*g^4*i^2 - 3*a^6*b^2*d^6*g^4*i^2)*x^3 + 3*(a*b^7
*c^6*g^4*i^2 - 4*a^2*b^6*c^5*d*g^4*i^2 + 5*a^3*b^5*c^4*d^2*g^4*i^2 - 5*a^5*
b^3*c^2*d^4*g^4*i^2 + 4*a^6*b^2*c*d^5*g^4*i^2 - a^7*b*d^6*g^4*i^2)*x^2 + (3
*a^2*b^6*c^6*g^4*i^2 - 14*a^3*b^5*c^5*d*g^4*i^2 + 25*a^4*b^4*c^4*d^2*g^4*i^
2 - 20*a^5*b^3*c^3*d^3*g^4*i^2 + 5*a^6*b^2*c^2*d^4*g^4*i^2 + 2*a^7*b*c*d^5*
g^4*i^2 - a^8*d^6*g^4*i^2)*x) + (2*b^4*c^4 - 27*a*b^3*c^3*d + 324*a^2*b^2*c
^2*d^2 - 245*a^3*b*c*d^3 - 54*a^4*d^4 + 330*(b^4*c*d^3 - a*b^3*d^4)*x^3 + 3
6*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d
^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a)^3 - 3
6*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d
^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(d*x + c)^3 + 1
5*(17*b^4*c^2*d^2 + 32*a*b^3*c*d^3 - 49*a^2*b^2*d^4)*x^2 - 90*(b^4*d^4*x^4
+ a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^
4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a)^2 - 18*(5*b^4*d^4*x^
4 + 5*a^3*b*c*d^3 + 5*(b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 15*(a*b^3*c*d^3 + a^2
*b^2*d^4)*x^2 + 5*(3*a^2*b^2*c*d^3 + a^3*b*d^4)*x - 6*(b^4*d^4*x^4 + a^3*b*
c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 +
 (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a))*log(d*x + c)^2 - (19*b^4*c^
3*d - 567*a*b^3*c^2*d^2 + 87*a^2*b^2*c*d^3 + 461*a^3*b*d^4)*x + 330*(b^4*d^
4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*
b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a) - 6*(55*b^4*d^
4*x^4 + 55*a^3*b*c*d^3 + 55*(b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 165*(a*b^3*c*d^
3 + a^2*b^2*d^4)*x^2 + 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3

```
*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^
4)*x)*log(b*x + a)^2 + 55*(3*a^2*b^2*c*d^3 + a^3*b*d^4)*x - 30*(b^4*d^4*x^4
 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d
^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a))*log(d*x + c))/(a^3
*b^5*c^6*g^4*i^2 - 5*a^4*b^4*c^5*d*g^4*i^2 + 10*a^5*b^3*c^4*d^2*g^4*i^2 - 1
0*a^6*b^2*c^3*d^3*g^4*i^2 + 5*a^7*b*c^2*d^4*g^4*i^2 - a^8*c*d^5*g^4*i^2 + (
b^8*c^5*d*g^4*i^2 - 5*a*b^7*c^4*d^2*g^4*i^2 + 10*a^2*b^6*c^3*d^3*g^4*i^2 -
10*a^3*b^5*c^2*d^4*g^4*i^2 + 5*a^4*b^4*c*d^5*g^4*i^2 - a^5*b^3*d^6*g^4*i^2)
*x^4 + (b^8*c^6*g^4*i^2 - 2*a*b^7*c^5*d*g^4*i^2 - 5*a^2*b^6*c^4*d^2*g^4*i^2
 + 20*a^3*b^5*c^3*d^3*g^4*i^2 - 25*a^4*b^4*c^2*d^4*g^4*i^2 + 14*a^5*b^3*c*d
^5*g^4*i^2 - 3*a^6*b^2*d^6*g^4*i^2)*x^3 + 3*(a*b^7*c^6*g^4*i^2 - 4*a^2*b^6*
c^5*d*g^4*i^2 + 5*a^3*b^5*c^4*d^2*g^4*i^2 - 5*a^5*b^3*c^2*d^4*g^4*i^2 + 4*a
^6*b^2*c*d^5*g^4*i^2 - a^7*b*d^6*g^4*i^2)*x^2 + (3*a^2*b^6*c^6*g^4*i^2 - 14
*a^3*b^5*c^5*d*g^4*i^2 + 25*a^4*b^4*c^4*d^2*g^4*i^2 - 20*a^5*b^3*c^3*d^3*g^
4*i^2 + 5*a^6*b^2*c^2*d^4*g^4*i^2 + 2*a^7*b*c*d^5*g^4*i^2 - a^8*d^6*g^4*i^2
)*x)) - 1/3*A^2*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c*d^2
 + 3*a^3*d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2*c*d
^2 - 11*a^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4
*a^3*b^4*c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2*
b^5*c^3*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^4*i^
2*x^3 + 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*c^2*
d^3 - 3*a^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^3*b^
4*c^4*d + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^5)*g
^4*i^2*x + (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2
*d^3 + a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*
d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*
i^2) - 12*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2
 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2)) - 2/9*(b^4*c^4 -
 9*a*b^3*c^3*d + 54*a^2*b^2*c^2*d^2 - 55*a^3*b*c*d^3 + 9*a^4*d^4 + 30*(b^4*
c*d^3 - a*b^3*d^4)*x^3 + 3*(11*b^4*c^2*d^2 + 8*a*b^3*c*d^3 - 19*a^2*b^2*d^4
)*x^2 - 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(
a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x +
 a)^2 - 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(
a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(d*x +
 c)^2 - (5*b^4*c^3*d - 81*a*b^3*c^2*d^2 + 57*a^2*b^2*c*d^3 + 19*a^3*b*d^4)*
x + 30*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^
3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a)
- 6*(5*b^4*d^4*x^4 + 5*a^3*b*c*d^3 + 5*(b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 15*(
a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 5*(3*a^2*b^2*c*d^3 + a^3*b*d^4)*x - 6*(b^4
*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a
^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a))*log(d*x +
c))*A*B/(a^3*b^5*c^6*g^4*i^2 - 5*a^4*b^4*c^5*d*g^4*i^2 + 10*a^5*b^3*c^4*d^2
*g^4*i^2 - 10*a^6*b^2*c^3*d^3*g^4*i^2 + 5*a^7*b*c^2*d^4*g^4*i^2 - a^8*c*d^5
*g^4*i^2 + (b^8*c^5*d*g^4*i^2 - 5*a*b^7*c^4*d^2*g^4*i^2 + 10*a^2*b^6*c^3*d^
3*g^4*i^2 - 10*a^3*b^5*c^2*d^4*g^4*i^2 + 5*a^4*b^4*c*d^5*g^4*i^2 - a^5*b^3*
d^6*g^4*i^2)*x^4 + (b^8*c^6*g^4*i^2 - 2*a*b^7*c^5*d*g^4*i^2 - 5*a^2*b^6*c^4
*d^2*g^4*i^2 + 20*a^3*b^5*c^3*d^3*g^4*i^2 - 25*a^4*b^4*c^2*d^4*g^4*i^2 + 14
*a^5*b^3*c*d^5*g^4*i^2 - 3*a^6*b^2*d^6*g^4*i^2)*x^3 + 3*(a*b^7*c^6*g^4*i^2
- 4*a^2*b^6*c^5*d*g^4*i^2 + 5*a^3*b^5*c^4*d^2*g^4*i^2 - 5*a^5*b^3*c^2*d^4*g
^4*i^2 + 4*a^6*b^2*c*d^5*g^4*i^2 - a^7*b*d^6*g^4*i^2)*x^2 + (3*a^2*b^6*c^6*
g^4*i^2 - 14*a^3*b^5*c^5*d*g^4*i^2 + 25*a^4*b^4*c^4*d^2*g^4*i^2 - 20*a^5*b^
3*c^3*d^3*g^4*i^2 + 5*a^6*b^2*c^2*d^4*g^4*i^2 + 2*a^7*b*c*d^5*g^4*i^2 - a^8
*d^6*g^4*i^2)*x)
```

mupad [B] time = 13.57, size = 2701, normalized size = 3.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^4*(c*i + d*i*x)^2
```

),x)

[Out] (log((e*(a + b*x))/(c + d*x))*(x^2*((4*B^2*b*d)/(g^4*i^2*(a*d - b*c)^3) - (
4*b*d^3*(b*d*((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))
/(2*b*d^2)) + ((a*d + b*c)*(a*d - b*c))/d^2)*(5*B^2 + 6*A*B))/(3*g^4*i^2*(a
*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) + x*((8*(
2*B^2 - 3*A*B))/(9*g^4*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (4*B^2*(a*d +
 b*c))/(g^4*i^2*(a*d - b*c)^3) - (4*b*d^3*(((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*
d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2))*(a*d + b*c) + (a*c*(a*d - b*c))/d
^2)*(5*B^2 + 6*A*B))/(3*g^4*i^2*(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*a*b^2*
c^2*d - 3*a^2*b*c*d^2))) - (2*(B^2*b*c - 9*B^2*a*d + 9*A*B*a*d + 3*A*B*b*c)
)/(9*g^4*i^2*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (4*B^2*a*c)/(g^4*i^
2*(a*d - b*c)^3) - (4*b^2*d^2*x^3*(5*B^2 + 6*A*B))/(3*g^4*i^2*(a*d - b*c)*(
a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (4*a*b*c*d^3*((2*a^2*
d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2))*(5*B^2 +
6*A*B))/(3*g^4*i^2*(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2
*b*c*d^2))))/(b^2*x^4 + (a^3*c)/(b*d) + (x*(a^3*d + 3*a^2*b*c))/(b*d) + (x^
3*(b^3*c + 3*a*b^2*d))/(b*d) + (x^2*(3*a*b^2*c + 3*a^2*b*d))/(b*d)) - ((27*
A^2*a^3*d^3 + 9*A^2*b^3*c^3 + 54*B^2*a^3*d^3 + 2*B^2*b^3*c^3 - 54*A*B*a^3*d
^3 + 6*A*B*b^3*c^3 - 45*A^2*a*b^2*c^2*d + 117*A^2*a^2*b*c*d^2 - 25*B^2*a*b^
2*c^2*d + 299*B^2*a^2*b*c*d^2 - 48*A*B*a*b^2*c^2*d + 276*A*B*a^2*b*c*d^2)/(
3*(a*d - b*c)) + (2*x^3*(18*A^2*b^3*d^3 + 55*B^2*b^3*d^3 + 30*A*B*b^3*d^3))
/(a*d - b*c) + (x*(198*A^2*a^2*b*d^3 + 461*B^2*a^2*b*d^3 - 18*A^2*b^3*c^2*d
 - 19*B^2*b^3*c^2*d + 144*A^2*a*b^2*c*d^2 + 548*B^2*a*b^2*c*d^2 + 114*A*B*a
^2*b*d^3 - 30*A*B*b^3*c^2*d + 456*A*B*a*b^2*c*d^2))/(3*(a*d - b*c)) + (x^2*
(90*A^2*a*b^2*d^3 + 245*B^2*a*b^2*d^3 + 18*A^2*b^3*c*d^2 + 85*B^2*b^3*c*d^2
 + 114*A*B*a*b^2*d^3 + 66*A*B*b^3*c*d^2))/(a*d - b*c))/(x*(9*a^6*d^4*g^4*i^
2 - 27*a^2*b^4*c^4*g^4*i^2 + 72*a^3*b^3*c^3*d*g^4*i^2 - 54*a^4*b^2*c^2*d^2*
g^4*i^2) - x^2*(27*a*b^5*c^4*g^4*i^2 - 27*a^5*b*d^4*g^4*i^2 - 54*a^2*b^4*c^
3*d*g^4*i^2 + 54*a^4*b^2*c*d^3*g^4*i^2) - x^3*(9*b^6*c^4*g^4*i^2 - 27*a^4*b
^2*d^4*g^4*i^2 + 72*a^3*b^3*c*d^3*g^4*i^2 - 54*a^2*b^4*c^2*d^2*g^4*i^2) + x
^4*(9*a^3*b^3*d^4*g^4*i^2 - 9*b^6*c^3*d*g^4*i^2 + 27*a*b^5*c^2*d^2*g^4*i^2
 - 27*a^2*b^4*c*d^3*g^4*i^2) - 9*a^3*b^3*c^4*g^4*i^2 + 9*a^6*c*d^3*g^4*i^2 +
 27*a^4*b^2*c^3*d*g^4*i^2 - 27*a^5*b*c^2*d^2*g^4*i^2) - log((e*(a + b*x))/(
c + d*x))^2*((x*((4*B^2)/(3*g^4*i^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (4*B
^2*b*d^3*(((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2
*b*d^2))*(a*d + b*c) + (a*c*(a*d - b*c))/d^2))/(g^4*i^2*(a*d - b*c)^2*(a^3*
d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) + (B^2*(3*a*d + b*c))/(3*g
^4*i^2*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (4*B^2*b^2*d^2*x^3)/(g^4*
i^2*(a*d - b*c)*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (4*B
^2*b*d^3*x^2*(b*d*((2*a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d -
b*c))/(2*b*d^2)) + ((a*d + b*c)*(a*d - b*c))/d^2))/(g^4*i^2*(a*d - b*c)^2*(
a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) + (4*B^2*a*b*c*d^3*((2*
a^2*d^2 + b^2*c^2 - 3*a*b*c*d)/(2*b*d^3) + (a*(a*d - b*c))/(2*b*d^2)))/(g^4
i^2(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)))/(b
^2*x^4 + (a^3*c)/(b*d) + (x*(a^3*d + 3*a^2*b*c))/(b*d) + (x^3*(b^3*c + 3*a*
b^2*d))/(b*d) + (x^2*(3*a*b^2*c + 3*a^2*b*d))/(b*d)) - (2*b*d^3*(5*B^2 + 6*
A*B))/(3*g^4*i^2*(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b
*c*d^2))) - (b*d^3*atan((b*d^3*(18*A^2 + 55*B^2 + 30*A*B)*(9*a^5*d^5*g^4*i^
2 + 9*b^5*c^5*g^4*i^2 - 27*a*b^4*c^4*d*g^4*i^2 - 27*a^4*b*c*d^4*g^4*i^2 + 1
8*a^2*b^3*c^3*d^2*g^4*i^2 + 18*a^3*b^2*c^2*d^3*g^4*i^2)*2i)/(9*g^4*i^2*(a*d
 - b*c)^5*(36*A^2*b*d^3 + 110*B^2*b*d^3 + 60*A*B*b*d^3)) + (b^2*d^4*x*(18*A
^2 + 55*B^2 + 30*A*B)*(a^4*d^4*g^4*i^2 + b^4*c^4*g^4*i^2 - 4*a*b^3*c^3*d*g^
4*i^2 - 4*a^3*b*c*d^3*g^4*i^2 + 6*a^2*b^2*c^2*d^2*g^4*i^2)*4i)/(g^4*i^2*(a*
d - b*c)^5*(36*A^2*b*d^3 + 110*B^2*b*d^3 + 60*A*B*b*d^3)))*(18*A^2 + 55*B^2
 + 30*A*B)*4i)/(9*g^4*i^2*(a*d - b*c)^5) + (4*B^2*b*d^3*log((e*(a + b*x))/(
c + d*x))^3)/(3*g^4*i^2*(a*d - b*c)^2*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d -
3*a^2*b*c*d^2))

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**4/(d*i*x+c*i)**2,x)
[Out] Timed out
```

3.100 $\int \frac{(ag+bgx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dix)^3}\,dx$

Optimal. Leaf size=635

$$\frac{6b^2Bg^3(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^4i^3}+\frac{3b^2g^3(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{d^4i^3}+\frac{2b^2Bg}{}$$

```
[Out] 1/4*B^2*(-a*d+b*c)*g^3*(b*x+a)^2/d^2/i^3/(d*x+c)^2-4*A*b*B*(-a*d+b*c)*g^3*(
b*x+a)/d^3/i^3/(d*x+c)+4*b*B^2*(-a*d+b*c)*g^3*(b*x+a)/d^3/i^3/(d*x+c)-4*b*B
^2*(-a*d+b*c)*g^3*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/d^3/i^3/(d*x+c)-1/2*B*(-a*d
+b*c)*g^3*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^2/i^3/(d*x+c)^2+2*b^2*B*(
-a*d+b*c)*g^3*ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))/d^4/i^3+
b^2*g^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^3/i^3+1/2*(-a*d+b*c)*g^3*(b
*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^2/i^3/(d*x+c)^2+2*b*(-a*d+b*c)*g^3*
(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^3/i^3/(d*x+c)+3*b^2*(-a*d+b*c)*g^3*
ln((-a*d+b*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^4/i^3+2*b^2*B^2*(-
a*d+b*c)*g^3*polylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i^3+6*b^2*B*(-a*d+b*c)*g^3*
(A+B*ln(e*(b*x+a)/(d*x+c)))*polylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i^3-6*b^2*B^
2*(-a*d+b*c)*g^3*polylog(3,d*(b*x+a)/b/(d*x+c))/d^4/i^3
```

Rubi [B] time = 6.24, antiderivative size = 1890, normalized size of antiderivative = 2.98, number of steps used = 124, number of rules used = 26, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.619, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^
3,x]
```

```
[Out] (B^2*(b*c - a*d)^3*g^3)/(4*d^4*i^3*(c + d*x)^2) - (9*b*B^2*(b*c - a*d)^2*g^
3)/(2*d^4*i^3*(c + d*x)) - (9*b^2*B^2*(b*c - a*d)*g^3*Log[a + b*x])/(2*d^4*
i^3) - (a*b^2*B^2*g^3*Log[a + b*x]^2)/(d^3*i^3) - (5*b^2*B^2*(b*c - a*d)*g^
3*Log[a + b*x]^2)/(2*d^4*i^3) + (3*b^2*B^2*(b*c - a*d)*g^3*Log[a + b*x]*Log
[(c + d*x)^(-1)]^2)/(d^4*i^3) - (3*b^2*B^2*(b*c - a*d)*g^3*Log[-((d*(a + b*
x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/(d^4*i^3) - (B*(b*c - a*d)^3*g^3*(
A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*d^4*i^3*(c + d*x)^2) + (5*b*B*(b*c
- a*d)^2*g^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^4*i^3*(c + d*x)) + (2
*a*b^2*B*g^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^3*i^3) +
 (5*b^2*B*(b*c - a*d)*g^3*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])
)/(d^4*i^3) + (b^3*g^3*x*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(d^3*i^3)
+ ((b*c - a*d)^3*g^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*d^4*i^3*(c
+ d*x)^2) - (3*b*(b*c - a*d)^2*g^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/
(d^4*i^3*(c + d*x)) + (9*b^2*B^2*(b*c - a*d)*g^3*Log[c + d*x])/(2*d^4*i^3)
+ (3*b^2*B^2*(b*c - a*d)*g^3*Log[a + b*x]^2*Log[c + d*x])/(d^4*i^3) + (2*b^
3*B^2*c*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4*i^3) + (6*
A*b^2*B*(b*c - a*d)*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^
4*i^3) + (5*b^2*B^2*(b*c - a*d)*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c
 + d*x])/(d^4*i^3) + (6*b^2*B^2*(b*c - a*d)*g^3*Log[a + b*x]*Log[(c + d*x)^
(-1)]*Log[c + d*x])/(d^4*i^3) - (6*b^2*B^2*(b*c - a*d)*g^3*Log[-((d*(a + b*
x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(
c + d*x)])*Log[c + d*x])/(d^4*i^3) - (2*b^3*B*c*g^3*(A + B*Log[(e*(a + b*x)
)/(c + d*x)])*Log[c + d*x])/(d^4*i^3) - (5*b^2*B*(b*c - a*d)*g^3*(A + B*Log
[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d^4*i^3) - (3*b^2*(b*c - a*d)*g^3
*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/(d^4*i^3) - (b^3*B^2*
```

```
c*g^3*Log[c + d*x]^2)/(d^4*i^3) - (3*A*b^2*B*(b*c - a*d)*g^3*Log[c + d*x]^2
)/(d^4*i^3) - (5*b^2*B^2*(b*c - a*d)*g^3*Log[c + d*x]^2)/(2*d^4*i^3) + (3*b
^2*B^2*(b*c - a*d)*g^3*Log[a + b*x]*Log[c + d*x]^2)/(d^4*i^3) - (3*b^2*B^2*
(b*c - a*d)*g^3*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/(d^4*i^3) - (b
^2*B^2*(b*c - a*d)*g^3*Log[c + d*x]^3)/(d^4*i^3) + (2*a*b^2*B^2*g^3*Log[a +
 b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^3*i^3) + (5*b^2*B^2*(b*c - a*d)*g^
3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4*i^3) - (3*b^2*B^2*(b*c
- a*d)*g^3*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4*i^3) + (2*a*
b^2*B^2*g^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i^3) + (5*b^2*B^
2*(b*c - a*d)*g^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^4*i^3) - (6*
b^2*B^2*(b*c - a*d)*g^3*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d)
)])/(d^4*i^3) + (2*b^3*B^2*c*g^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^
4*i^3) + (6*A*b^2*B*(b*c - a*d)*g^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/
(d^4*i^3) + (5*b^2*B^2*(b*c - a*d)*g^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
])/(d^4*i^3) + (6*b^2*B^2*(b*c - a*d)*g^3*Log[(c + d*x)^(-1)]*PolyLog[2, (b
*(c + d*x))/(b*c - a*d)])/(d^4*i^3) - (6*b^2*B^2*(b*c - a*d)*g^3*(Log[a + b
*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c
+ d*x))/(b*c - a*d)])/(d^4*i^3) + (6*b^2*B^2*(b*c - a*d)*g^3*PolyLog[3, -((
d*(a + b*x))/(b*c - a*d))])/(d^4*i^3) + (6*b^2*B^2*(b*c - a*d)*g^3*PolyLog[
3, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
```

```
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
```

```
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
```

```
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^3 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(100c+100dx)^3}\,dx = \int \left(\frac{b^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1000000d^3} + \frac{(-bc+ad)^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)\right.$$

$$= \frac{\left(b^3g^3\right)\int\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2 dx}{1000000d^3} - \frac{\left(3b^2(bc-ad)g^3\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.}{c+dx}}{1000000d^3}$$

$$= \frac{b^3g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1000000d^3} + \frac{(bc-ad)^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2000000d^4(c+dx)^2} -$$

$$= \frac{b^3g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1000000d^3} + \frac{(bc-ad)^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2000000d^4(c+dx)^2} -$$

$$= \frac{b^3g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1000000d^3} + \frac{(bc-ad)^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2000000d^4(c+dx)^2} -$$

$$= \frac{b^3g^3x\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1000000d^3} + \frac{(bc-ad)^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2000000d^4(c+dx)^2} -$$

$$= -\frac{B(bc-ad)^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2000000d^4(c+dx)^2} + \frac{bB(bc-ad)^2g^3\left(A+B\log\left(\frac{e(}{c}\right.\right.}{200000d^4(c+dx)}$$

$$= -\frac{B(bc-ad)^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2000000d^4(c+dx)^2} + \frac{bB(bc-ad)^2g^3\left(A+B\log\left(\frac{e(}{c}\right.\right.}{200000d^4(c+dx)}$$

$$= -\frac{B(bc-ad)^3g^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2000000d^4(c+dx)^2} + \frac{bB(bc-ad)^2g^3\left(A+B\log\left(\frac{e(}{c}\right.\right.}{200000d^4(c+dx)}$$

$$= \frac{B^2(bc-ad)^3g^3}{4000000d^4(c+dx)^2} - \frac{9bB^2(bc-ad)^2g^3}{2000000d^4(c+dx)} - \frac{9b^2B^2(bc-ad)g^3\log(a}{2000000d^4}$$

$$= \frac{B^2(bc-ad)^3g^3}{4000000d^4(c+dx)^2} - \frac{9bB^2(bc-ad)^2g^3}{2000000d^4(c+dx)} - \frac{9b^2B^2(bc-ad)g^3\log(a}{2000000d^4}$$

$$= \frac{B^2(bc-ad)^3g^3}{4000000d^4(c+dx)^2} - \frac{9bB^2(bc-ad)^2g^3}{2000000d^4(c+dx)} - \frac{9b^2B^2(bc-ad)g^3\log(a}{2000000d^4}$$

$$= \frac{B^2(bc-ad)^3g^3}{4000000d^4(c+dx)^2} - \frac{9bB^2(bc-ad)^2g^3}{2000000d^4(c+dx)} - \frac{9b^2B^2(bc-ad)g^3\log(a}{2000000d^4}$$

$$= \frac{B^2(bc-ad)^3g^3}{4000000d^4(c+dx)^2} - \frac{9bB^2(bc-ad)^2g^3}{2000000d^4(c+dx)} - \frac{9b^2B^2(bc-ad)g^3\log(a}{2000000d^4}$$

$$= \frac{B^2(bc-ad)^3g^3}{4000000d^4(c+dx)^2} - \frac{9bB^2(bc-ad)^2g^3}{2000000d^4(c+dx)} - \frac{9b^2B^2(bc-ad)g^3\log(a}{2000000d^4}$$

$$= \frac{B^2(bc-ad)^3g^3}{4000000d^4(c+dx)^2} - \frac{9bB^2(bc-ad)^2g^3}{2000000d^4(c+dx)} - \frac{9b^2B^2(bc-ad)g^3\log(a}{2000000d^4}$$

Mathematica [B] time = 7.86, size = 6052, normalized size = 9.53

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d
*i*x)^3,x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2b^3g^3x^3 + 3\,A^2ab^2g^3x^2 + 3\,A^2a^2bg^3x + A^2a^3g^3 + \left(B^2b^3g^3x^3 + 3\,B^2ab^2g^3x^2 + 3\,B^2a^2bg^3x + B^2a^3g}{d^3i^3x^3 + 3\,cd^2i^3x^2 + 3\,c^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, alg
orithm="fricas")
```

```
[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a
^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a
^3*g^3)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*b^3*g^3*x^3 + 3*A*B*a*b^2*g
^3*x^2 + 3*A*B*a^2*b*g^3*x + A*B*a^3*g^3)*log((b*e*x + a*e)/(d*x + c)))/(d^
3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 2.15, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^{3} \left(B \ln \left(\frac{(bx+a)e}{dx+c}\right) + A\right)^{2}}{(dix + ci)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)
```

```
[Out] int((b*g*x+a*g)^3*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, alg
orithm="maxima")
```

```
[Out] -3/2*A*B*a^2*b*g^3*(2*(2*d*x + c)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^4
*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a
*d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^
```

```
3*d^2 - a*c^2*d^3)*i^3) - 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 -
2*a*b*c*d^3 + a^2*d^4)*i^3) + 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^
2 - 2*a*b*c*d^3 + a^2*d^4)*i^3)) - 1/2*A^2*b^3*g^3*((6*c^2*d*x + 5*c^3)/(d^
6*i^3*x^2 + 2*c*d^5*i^3*x + c^2*d^4*i^3) - 2*x/(d^3*i^3) + 6*c*log(d*x + c)
/(d^4*i^3)) + 1/2*A*B*a^3*g^3*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i
^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) - 2*log
(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)
 + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log
(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) + 3/2*A^2*a*b^2*g^3*((
4*c*d*x + 3*c^2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2*log(d*x +
c)/(d^3*i^3)) - 3/2*(2*d*x + c)*A^2*a^2*b*g^3/(d^4*i^3*x^2 + 2*c*d^3*i^3*x
+ c^2*d^2*i^3) - 1/2*A^2*a^3*g^3/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)
- 1/2*(2*((b^3*c*d^2*g^3 - a*b^2*d^3*g^3)*B^2*x^2 + 2*(b^3*c^2*d*g^3 - a*b^
2*c*d^2*g^3)*B^2*x + (b^3*c^3*g^3 - a*b^2*c^2*d*g^3)*B^2)*log(d*x + c)^3 -
(2*B^2*b^3*d^3*g^3*x^3 + 4*B^2*b^3*c*d^2*g^3*x^2 - 2*(2*b^3*c^2*d*g^3 - 6*a
*b^2*c*d^2*g^3 + 3*a^2*b*d^3*g^3)*B^2*x - (5*b^3*c^3*g^3 - 9*a*b^2*c^2*d*g^
3 + 3*a^2*b*c*d^2*g^3 + a^3*d^3*g^3)*B^2)*log(d*x + c)^2)/(d^6*i^3*x^2 + 2*
c*d^5*i^3*x + c^2*d^4*i^3) - integrate(-(3*B^2*a^2*b*d^3*g^3*x*log(e)^2 + B
^2*a^3*d^3*g^3*log(e)^2 + (B^2*b^3*d^3*g^3*log(e)^2 + 2*A*B*b^3*d^3*g^3*log
(e))*x^3 + 3*(B^2*a*b^2*d^3*g^3*log(e)^2 + 2*A*B*a*b^2*d^3*g^3*log(e))*x^2
+ (B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x +
B^2*a^3*d^3*g^3)*log(b*x + a)^2 + 2*(3*B^2*a^2*b*d^3*g^3*x*log(e) + B^2*a^3
*d^3*g^3*log(e) + (B^2*b^3*d^3*g^3*log(e) + A*B*b^3*d^3*g^3)*x^3 + 3*(B^2*a
*b^2*d^3*g^3*log(e) + A*B*a*b^2*d^3*g^3)*x^2)*log(b*x + a) + (2*(2*b^3*c^2*
d*g^3 - 6*a*b^2*c*d^2*g^3 - 3*(g^3*log(e) - g^3)*a^2*b*d^3)*B^2*x - 2*(A*B*
b^3*d^3*g^3 + (g^3*log(e) + g^3)*B^2*b^3*d^3)*x^3 + (5*b^3*c^3*g^3 - 9*a*b^
2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 - (2*g^3*log(e) - g^3)*a^3*d^3)*B^2 - 2*(3*
A*B*a*b^2*d^3*g^3 + (3*a*b^2*d^3*g^3*log(e) + 2*b^3*c*d^2*g^3)*B^2)*x^2 - 2
*(B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B
^2*a^3*d^3*g^3)*log(b*x + a))*log(d*x + c))/(d^6*i^3*x^3 + 3*c*d^5*i^3*x^2
+ 3*c^2*d^4*i^3*x + c^3*d^3*i^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^3\,{\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}^2}{{\left(c\,i+d\,i\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^
3,x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^
3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

3.101 $\int \frac{(ag+bgx)^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dix)^3}\,dx$

Optimal. Leaf size=410

$$-\frac{2b^2Bg^2\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^3i^3}-\frac{b^2g^2\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{d^3i^3}-\frac{bg^2(a+bx)\left(B\log\left(\frac{e(a+}{c+}\right.\right.}{d^2i^3(c+dx)}$$

```
[Out] -1/4*B^2*g^2*(b*x+a)^2/d/i^3/(d*x+c)^2+2*A*b*B*g^2*(b*x+a)/d^2/i^3/(d*x+c)-
2*b*B^2*g^2*(b*x+a)/d^2/i^3/(d*x+c)+2*b*B^2*g^2*(b*x+a)*ln(e*(b*x+a)/(d*x+c
))/d^2/i^3/(d*x+c)+1/2*B*g^2*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/d/i^3/(d
*x+c)^2-1/2*g^2*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d/i^3/(d*x+c)^2-b*g
^2*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^2/i^3/(d*x+c)-b^2*g^2*ln((-a*d+b
*c)/b/(d*x+c))*(A+B*ln(e*(b*x+a)/(d*x+c)))^2/d^3/i^3-2*b^2*B*g^2*(A+B*ln(e*
(b*x+a)/(d*x+c)))*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i^3+2*b^2*B^2*g^2*poly
log(3,d*(b*x+a)/b/(d*x+c))/d^3/i^3
```

Rubi [B] time = 5.27, antiderivative size = 1328, normalized size of antiderivative = 3.24, number of steps used = 102, number of rules used = 25, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.595, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$\frac{b^2B^2g^2\log^3(c+dx)}{3d^3i^3}-\frac{b^2B^2g^2\log(a+bx)\log^2(c+dx)}{d^3i^3}+\frac{b^2B^2g^2\log\left(\frac{e(a+bx)}{c+dx}\right)\log^2(c+dx)}{d^3i^3}+\frac{3b^2B^2g^2\log^2(c+d}{2d^3i^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^
3,x]
```

```
[Out] -(B^2*(b*c - a*d)^2*g^2)/(4*d^3*i^3*(c + d*x)^2) + (5*b*B^2*(b*c - a*d)*g^2
)/(2*d^3*i^3*(c + d*x)) + (5*b^2*B^2*g^2*Log[a + b*x])/(2*d^3*i^3) + (3*b^2
*B^2*g^2*Log[a + b*x]^2)/(2*d^3*i^3) - (b^2*B^2*g^2*Log[a + b*x]*Log[(c + d
*x)^(-1)]^2)/(d^3*i^3) + (b^2*B^2*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log
[(c + d*x)^(-1)]^2)/(d^3*i^3) + (B*(b*c - a*d)^2*g^2*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(2*d^3*i^3*(c + d*x)^2) - (3*b*B*(b*c - a*d)*g^2*(A + B*Log
[(e*(a + b*x))/(c + d*x)]))/(d^3*i^3*(c + d*x)) - (3*b^2*B*g^2*Log[a + b*x]
*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d^3*i^3) - ((b*c - a*d)^2*g^2*(A +
B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*d^3*i^3*(c + d*x)^2) + (2*b*(b*c - a*
d)*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(d^3*i^3*(c + d*x)) - (5*b^2
*B^2*g^2*Log[c + d*x])/(2*d^3*i^3) - (b^2*B^2*g^2*Log[a + b*x]^2*Log[c + d*
x])/(d^3*i^3) - (2*A*b^2*B*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*
x])/(d^3*i^3) - (3*b^2*B^2*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*
x])/(d^3*i^3) - (2*b^2*B^2*g^2*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x
])/(d^3*i^3) + (2*b^2*B^2*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*
x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d^3
*i^3) + (3*b^2*B*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d^
3*i^3) + (b^2*g^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/(d^3
*i^3) + (A*b^2*B*g^2*Log[c + d*x]^2)/(d^3*i^3) + (3*b^2*B^2*g^2*Log[c + d*x
]^2)/(2*d^3*i^3) - (b^2*B^2*g^2*Log[a + b*x]*Log[c + d*x]^2)/(d^3*i^3) + (b
^2*B^2*g^2*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/(d^3*i^3) + (b^2*B^
2*g^2*Log[c + d*x]^3)/(3*d^3*i^3) - (3*b^2*B^2*g^2*Log[a + b*x]*Log[(b*(c +
 d*x))/(b*c - a*d)])/(d^3*i^3) + (b^2*B^2*g^2*Log[a + b*x]^2*Log[(b*(c + d*
x))/(b*c - a*d)])/(d^3*i^3) - (3*b^2*B^2*g^2*PolyLog[2, -((d*(a + b*x))/(b*
c - a*d))])/(d^3*i^3) + (2*b^2*B^2*g^2*Log[a + b*x]*PolyLog[2, -((d*(a + b*
x))/(b*c - a*d))])/(d^3*i^3) - (2*A*b^2*B*g^2*PolyLog[2, (b*(c + d*x))/(b*c
 - a*d)])/(d^3*i^3) - (3*b^2*B^2*g^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])
```

```
/(d^3*i^3) - (2*b^2*B^2*g^2*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c + d*x))/(b
*c - a*d)])/(d^3*i^3) + (2*b^2*B^2*g^2*(Log[a + b*x] + Log[(c + d*x)^(-1)]
- Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^3
*i^3) - (2*b^2*B^2*g^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i^3)
- (2*b^2*B^2*g^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
```

```
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
```

```
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(101c+101dx)^3}\,dx = \int \left(\frac{(-bc+ad)^2 g^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1030301d^2(c+dx)^3} - \frac{2b(bc-ad)g^2 \left(A+B\log\right.}{1030301d^2(c+dx}\right.$$

$$= \frac{\left(b^2g^2\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}\,dx}{1030301d^2} - \frac{\left(2b(bc-ad)g^2\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(c+dx)^2}\,dx}{1030301d^2}$$

$$= -\frac{(bc-ad)^2 g^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2060602d^3(c+dx)^2} + \frac{2b(bc-ad)g^2 \left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{1030301d^3(c+dx)}$$

$$= -\frac{(bc-ad)^2 g^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2060602d^3(c+dx)^2} + \frac{2b(bc-ad)g^2 \left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{1030301d^3(c+dx)}$$

$$= -\frac{(bc-ad)^2 g^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2060602d^3(c+dx)^2} + \frac{2b(bc-ad)g^2 \left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{1030301d^3(c+dx)}$$

$$= -\frac{(bc-ad)^2 g^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2060602d^3(c+dx)^2} + \frac{2b(bc-ad)g^2 \left(A+B\log\left(\frac{e(a+}{c+}\right.\right.}{1030301d^3(c+dx)}$$

$$= \frac{B(bc-ad)^2 g^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2060602d^3(c+dx)^2} - \frac{3bB(bc-ad)g^2 \left(A+B\log\left(\frac{e(a-}{c+}\right.\right.}{1030301d^3(c+dx)}$$

$$= \frac{B(bc-ad)^2 g^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2060602d^3(c+dx)^2} - \frac{3bB(bc-ad)g^2 \left(A+B\log\left(\frac{e(a-}{c+}\right.\right.}{1030301d^3(c+dx)}$$

$$= \frac{B(bc-ad)^2 g^2 \left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2060602d^3(c+dx)^2} - \frac{3bB(bc-ad)g^2 \left(A+B\log\left(\frac{e(a-}{c+}\right.\right.}{1030301d^3(c+dx)}$$

$$= -\frac{B^2(bc-ad)^2 g^2}{4121204d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2}{2060602d^3(c+dx)} + \frac{5b^2B^2g^2\log(a+bx)}{2060602d^3} +$$

$$= -\frac{B^2(bc-ad)^2 g^2}{4121204d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2}{2060602d^3(c+dx)} + \frac{5b^2B^2g^2\log(a+bx)}{2060602d^3} +$$

$$= -\frac{B^2(bc-ad)^2 g^2}{4121204d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2}{2060602d^3(c+dx)} + \frac{5b^2B^2g^2\log(a+bx)}{2060602d^3} +$$

$$= -\frac{B^2(bc-ad)^2 g^2}{4121204d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2}{2060602d^3(c+dx)} + \frac{5b^2B^2g^2\log(a+bx)}{2060602d^3} +$$

$$= -\frac{B^2(bc-ad)^2 g^2}{4121204d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2}{2060602d^3(c+dx)} + \frac{5b^2B^2g^2\log(a+bx)}{2060602d^3} +$$

$$= -\frac{B^2(bc-ad)^2 g^2}{4121204d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2}{2060602d^3(c+dx)} + \frac{5b^2B^2g^2\log(a+bx)}{2060602d^3} +$$

$$= -\frac{B^2(bc-ad)^2 g^2}{4121204d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2}{2060602d^3(c+dx)} + \frac{5b^2B^2g^2\log(a+bx)}{2060602d^3} +$$

Mathematica [B] time = 5.11, size = 2950, normalized size = 7.20

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d
*i*x)^3,x]
```

```
[Out] (g^2*((-2*A^2*(b*c - a*d)^2)/(c + d*x)^2 + (8*A^2*b*(b*c - a*d))/(c + d*x)
+ 4*A^2*b^2*Log[c + d*x] - (4*a*A*b*B*d*(-(b^2*c^3) + 4*a*b*c^2*d - 3*a^2*c
*d^2 - 2*b^2*c^2*d*x + 6*a*b*c*d^2*x - 4*a^2*d^3*x - 2*b*(b*c - 2*a*d)*(c +
 d*x)^2*Log[a + b*x] + 2*(b*c - a*d)^2*(c + 2*d*x)*Log[(e*(a + b*x))/(c + d
*x)] + 2*b^2*c^3*Log[c + d*x] - 4*a*b*c^2*d*Log[c + d*x] + 4*b^2*c^2*d*x*Lo
g[c + d*x] - 8*a*b*c*d^2*x*Log[c + d*x] + 2*b^2*c*d^2*x^2*Log[c + d*x] - 4*
a*b*d^3*x^2*Log[c + d*x]))/((b*c - a*d)^2*(c + d*x)^2) - (2*a^2*A*B*d^2*(-(
b^2*c^2) + 4*a*b*c*d - a^2*d^2 + 2*b^2*c*d*x + 2*a*b*d^2*x + 2*b^2*d^2*x^2
- 2*b^2*(c + d*x)^2*Log[a/b + x] + 2*(b*c - a*d)^2*Log[(e*(a + b*x))/(c + d
*x)] + 2*b^2*c^2*Log[(b*(c + d*x))/(b*c - a*d)] + 4*b^2*c*d*x*Log[(b*(c + d
*x))/(b*c - a*d)] + 2*b^2*d^2*x^2*Log[(b*(c + d*x))/(b*c - a*d)]))/((b*c -
a*d)^2*(c + d*x)^2) + 2*A*b^2*B*(-2*Log[c/d + x]^2 - (8*c*(1 + Log[c/d + x]
))/(c + d*x) + (c^2*(1 + 2*Log[c/d + x]))/(c + d*x)^2 + 8*c*(Log[a/b + x]/(
c + d*x) + (b*(Log[a + b*x] - Log[c + d*x]))/(-(b*c) + a*d)) + 2*(-Log[a/b
+ x] + Log[c/d + x] + Log[(e*(a + b*x))/(c + d*x)])*((c*(3*c + 4*d*x))/(c +
 d*x)^2 + 2*Log[c + d*x]) + (2*c^2*(-Log[a/b + x] + (b*(c + d*x)*(b*c - a*d
 + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]))/(b*c - a*d)^2))/(c
 + d*x)^2 + 4*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*
(a + b*x))/(-(b*c) + a*d)])) + (2*a*b*B^2*d*(2*c*Log[(e*(a + b*x))/(c + d*x
)]^2 - 4*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]^2 - (4*(c + d*x)*(2*b*c - 2
*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c + d*
x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c + d*
x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d
)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c +
d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c +
d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] +
 Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])
))/(b*c - a*d) + (c*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c +
 d*x)^2*Log[a + b*x] - 2*(b*c - a*d)^2*Log[(e*(a + b*x))/(c + d*x)] - 4*b*(
b*c - a*d)*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)] - 4*b^2*(c + d*x)^2*Log[a
 + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b^2*(c + d*x)^2*Log[c + d*x] + 4*b
*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]
) - 4*b^2*(c + d*x)^2*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c + b
*d*x)] + 2*b^2*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x)
)/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*(c +
d*x)^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)]
 + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
])))/(b*c - a*d)^2))/(c + d*x)^2 - (a^2*B^2*d^2*((b*c - a*d)^2 + 2*b*(b*c -
 a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*(b*c - a*d)^2*Log[(e*(
a + b*x))/(c + d*x)] - 4*b*(b*c - a*d)*(c + d*x)*Log[(e*(a + b*x))/(c + d*x
)] - 4*b^2*(c + d*x)^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] + 2*(b*c -
 a*d)^2*Log[(e*(a + b*x))/(c + d*x)]^2 - 2*b^2*(c + d*x)^2*Log[c + d*x] + 4
*b*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*
x]) - 4*b^2*(c + d*x)^2*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a*d)/(b*c +
 b*d*x)] + 2*b^2*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*
x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*(c
+ d*x)^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d
)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*
d)])))/((b*c - a*d)^2*(c + d*x)^2) - 2*b^2*B^2*((c^2*Log[(e*(a + b*x))/(c +
 d*x)]^2)/(c + d*x)^2 - (4*c*Log[(e*(a + b*x))/(c + d*x)]^2)/(c + d*x) + 2*
Log[(e*(a + b*x))/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 4*Log[(e*(a
```

```
+ b*x))/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - (4*c*(2*b*c -
2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(e*(a + b*x))/(c +
d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b*(c +
d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c - a
*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c
+ d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c
+ d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)]
+ Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
])))/((b*c - a*d)*(c + d*x)) + (c^2*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d
*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*(b*c - a*d)^2*Log[(e*(a + b*x))/(c
+ d*x)] - 4*b*(b*c - a*d)*(c + d*x)*Log[(e*(a + b*x))/(c + d*x)] - 4*b^2*(
c + d*x)^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)] - 2*b^2*(c + d*x)^2*Lo
g[c + d*x] + 4*b*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d
*x)*Log[c + d*x]) - 4*b^2*(c + d*x)^2*Log[(e*(a + b*x))/(c + d*x)]*Log[(b*c
- a*d)/(b*c + b*d*x)] + 2*b^2*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*
Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)
]) + 2*b^2*(c + d*x)^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))
/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d
*x))/(b*c - a*d)])))/(2*(b*c - a*d)^2*(c + d*x)^2) - 4*PolyLog[3, (d*(a + b
*x))/(b*(c + d*x))])))/(4*d^3*i^3)
```

fricas [F] time = 1.26, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2b^2g^2x^2 + 2\,A^2abg^2x + A^2a^2g^2 + \left(B^2b^2g^2x^2 + 2\,B^2abg^2x + B^2a^2g^2\right)\log\left(\frac{bex+ae}{dx+c}\right)^2 + 2\left(ABb^2g^2x^2 + 2\right.}{d^3i^3x^3 + 3\,cd^2i^3x^2 + 3\,c^2di^3x + c^3i^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, alg
orithm="fricas")
```

```
[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^
2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log((b*e*x + a*e)/(d*x + c))^2 + 2*(A*B*
b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log((b*e*x + a*e)/(d*x + c)))/
(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 1.88, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^2 \left(B\ln\left(\frac{(bx+a)e}{dx+c}\right) + A\right)^2}{(dix + ci)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)
```

```
[Out] int((b*g*x+a*g)^2*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, alg
orithm="maxima")
```

```
[Out] -A*B*a*b*g^2*(2*(2*d*x + c)*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^4*i^3*x
^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*
x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2
- a*c^2*d^3)*i^3) - 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*
c*d^3 + a^2*d^4)*i^3) + 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*
a*b*c*d^3 + a^2*d^4)*i^3)) + 1/2*A*B*a^2*g^2*((2*b*d*x + 3*b*c - a*d)/((b*c
*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^
2)*i^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 + 2*c*d^2*i^3
*x + c^2*d*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i
^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) + 1/2*A
^2*b^2*g^2*((4*c*d*x + 3*c^2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) +
 2*log(d*x + c)/(d^3*i^3)) - (2*d*x + c)*A^2*a*b*g^2/(d^4*i^3*x^2 + 2*c*d^3
*i^3*x + c^2*d^2*i^3) - 1/2*A^2*a^2*g^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*
d*i^3) + 1/6*(2*(B^2*b^2*d^2*g^2*x^2 + 2*B^2*b^2*c*d*g^2*x + B^2*b^2*c^2*g^
2)*log(d*x + c)^3 + 3*(4*(b^2*c*d*g^2 - a*b*d^2*g^2)*B^2*x + (3*b^2*c^2*g^2
 - 2*a*b*c*d*g^2 - a^2*d^2*g^2)*B^2)*log(d*x + c)^2)/(d^5*i^3*x^2 + 2*c*d^4
*i^3*x + c^2*d^3*i^3) - integrate(-(2*B^2*a*b*d^2*g^2*x*log(e)^2 + B^2*a^2*
d^2*g^2*log(e)^2 + (B^2*b^2*d^2*g^2*log(e)^2 + 2*A*B*b^2*d^2*g^2*log(e))*x^
2 + (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log(b*x +
 a)^2 + 2*(2*B^2*a*b*d^2*g^2*x*log(e) + B^2*a^2*d^2*g^2*log(e) + (B^2*b^2*d
^2*g^2*log(e) + A*B*b^2*d^2*g^2)*x^2)*log(b*x + a) - (4*(b^2*c*d*g^2 + (g^2
*log(e) - g^2)*a*b*d^2)*B^2*x + (3*b^2*c^2*g^2 - 2*a*b*c*d*g^2 + (2*g^2*log
(e) - g^2)*a^2*d^2)*B^2 + 2*(B^2*b^2*d^2*g^2*log(e) + A*B*b^2*d^2*g^2)*x^2
+ 2*(B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log(b*x +
 a))*log(d*x + c))/(d^5*i^3*x^3 + 3*c*d^4*i^3*x^2 + 3*c^2*d^3*i^3*x + c^3*d
^2*i^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^2\,{\left(A+B\,\ln\left(\frac{e\,\left(a+b\,x\right)}{c+d\,x}\right)\right)}^2}{{\left(c\,i+d\,i\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^
3,x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^
3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$g^2\left(\int \frac{A^2a^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{A^2b^2x^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{B^2a^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \int \frac{2ABa^2\log\left(\frac{ae}{c+dx}+\frac{bex}{c+dx}\right)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**3,x)
```

```
[Out] g**2*(Integral(A**2*a**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x
) + Integral(A**2*b**2*x**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3)
, x) + Integral(B**2*a**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(c**3 + 3
*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*A*B*a**2*log(a*e/(c
 + d*x) + b*e*x/(c + d*x))/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3),
```

```
 x) + Integral(2*A**2*a*b*x/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3)
, x) + Integral(B**2*b**2*x**2*log(a*e/(c + d*x) + b*e*x/(c + d*x))**2/(c**
3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*A*B*b**2*x**2*
log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d
**3*x**3), x) + Integral(2*B**2*a*b*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))*
*2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integral(4*A*B*a*b
*x*log(a*e/(c + d*x) + b*e*x/(c + d*x))/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2
+ d**3*x**3), x))/i**3
```

3.102 $\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dix)^3}\,dx$

Optimal. Leaf size=141

$$\frac{g(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2i^3(c+dx)^2(bc-ad)}-\frac{Bg(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2i^3(c+dx)^2(bc-ad)}+\frac{B^2g(a+bx)^2}{4i^3(c+dx)^2(bc-ad)}$$

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

Rubi [C] time = 1.96, antiderivative size = 634, normalized size of antiderivative = 4.50, number of steps used = 58, number of rules used = 11, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.275, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{b^2B^2g\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{d^2i^3(bc-ad)}+\frac{b^2B^2g\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^2i^3(bc-ad)}+\frac{b^2Bg\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{d^2i^3(bc-ad)}-\frac{b^2Bg\log(c}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i*x)^3,
x]
```

```
[Out] (B^2*(b*c - a*d)*g)/(4*d^2*i^3*(c + d*x)^2) - (b*B^2*g)/(2*d^2*i^3*(c + d*x
)) - (b^2*B^2*g*Log[a + b*x])/(2*d^2*(b*c - a*d)*i^3) - (b^2*B^2*g*Log[a +
b*x]^2)/(2*d^2*(b*c - a*d)*i^3) - (B*(b*c - a*d)*g*(A + B*Log[(e*(a + b*x))
/(c + d*x)]))/(2*d^2*i^3*(c + d*x)^2) + (b*B*g*(A + B*Log[(e*(a + b*x))/(c
+ d*x)]))/(d^2*i^3*(c + d*x)) + (b^2*B*g*Log[a + b*x]*(A + B*Log[(e*(a + b*
x))/(c + d*x)]))/(d^2*(b*c - a*d)*i^3) + ((b*c - a*d)*g*(A + B*Log[(e*(a +
b*x))/(c + d*x)])^2)/(2*d^2*i^3*(c + d*x)^2) - (b*g*(A + B*Log[(e*(a + b*x)
)/(c + d*x)])^2)/(d^2*i^3*(c + d*x)) + (b^2*B^2*g*Log[c + d*x])/(2*d^2*(b*c
 - a*d)*i^3) + (b^2*B^2*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(
d^2*(b*c - a*d)*i^3) - (b^2*B*g*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c
+ d*x])/(d^2*(b*c - a*d)*i^3) - (b^2*B^2*g*Log[c + d*x]^2)/(2*d^2*(b*c - a*
d)*i^3) + (b^2*B^2*g*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^2*(b*c
 - a*d)*i^3) + (b^2*B^2*g*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*(b
*c - a*d)*i^3) + (b^2*B^2*g*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*(b*
c - a*d)*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(102c+102dx)^3}\,dx = \int \left(\frac{(-bc+ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1061208d(c+dx)^3} + \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1061208d(c+dx)^2}\right.$$

$$= \frac{(bg)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(c+dx)^2}dx}{1061208d} - \frac{((bc-ad)g)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(c+dx)^3}dx}{1061208d}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2122416d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1061208d^2(c+dx)} + \frac{(bB}{}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2122416d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1061208d^2(c+dx)} + \frac{(bB}{}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2122416d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1061208d^2(c+dx)} + \frac{(bB}{}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2122416d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1061208d^2(c+dx)} + \frac{(bB}{}$$

$$= -\frac{B(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2122416d^2(c+dx)^2} + \frac{bBg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1061208d^2(c+dx)} + \cdots$$

$$= -\frac{B(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2122416d^2(c+dx)^2} + \frac{bBg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1061208d^2(c+dx)} + \cdots$$

$$= -\frac{B(bc-ad)g\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2122416d^2(c+dx)^2} + \frac{bBg\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1061208d^2(c+dx)} + \cdots$$

$$= \frac{B^2(bc-ad)g}{4244832d^2(c+dx)^2} - \frac{bB^2g}{2122416d^2(c+dx)} - \frac{b^2B^2g\log(a+bx)}{2122416d^2(bc-ad)} - \cdots$$

$$= \frac{B^2(bc-ad)g}{4244832d^2(c+dx)^2} - \frac{bB^2g}{2122416d^2(c+dx)} - \frac{b^2B^2g\log(a+bx)}{2122416d^2(bc-ad)} - \cdots$$

$$= \frac{B^2(bc-ad)g}{4244832d^2(c+dx)^2} - \frac{bB^2g}{2122416d^2(c+dx)} - \frac{b^2B^2g\log(a+bx)}{2122416d^2(bc-ad)} - \cdots$$

$$= \frac{B^2(bc-ad)g}{4244832d^2(c+dx)^2} - \frac{bB^2g}{2122416d^2(c+dx)} - \frac{b^2B^2g\log(a+bx)}{2122416d^2(bc-ad)} - \cdots$$

Mathematica [C] time = 0.91, size = 767, normalized size = 5.44

$$g\left(-B\left(4b^2(c+dx)^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-4b^2(c+dx)^2\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2(bc-\cdots\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(c*i + d*i
*x)^3,x]
```

```
[Out] (g*(2*(b*c - a*d)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 - 4*b*(b*c - a*d
)*(c + d*x)*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2 + 4*b*B*(c + d*x)*(2*(b*
c - a*d)*(A + B*Log[(e*(a + b*x))/(c + d*x)]) + 2*b*(c + d*x)*Log[a + b*x]*
(A + B*Log[(e*(a + b*x))/(c + d*x)]) - 2*b*(c + d*x)*(A + B*Log[(e*(a + b*x
))/(c + d*x)])*Log[c + d*x] - 2*B*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b
*(c + d*x)*Log[c + d*x]) - b*B*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Lo
g[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])
 + b*B*(c + d*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[
c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) - B*(2*(b*c - a*d)^2*(
A + B*Log[(e*(a + b*x))/(c + d*x)]) + 4*b*(b*c - a*d)*(c + d*x)*(A + B*Log[
(e*(a + b*x))/(c + d*x)]) + 4*b^2*(c + d*x)^2*Log[a + b*x]*(A + B*Log[(e*(a
 + b*x))/(c + d*x)]) - 4*b^2*(c + d*x)^2*(A + B*Log[(e*(a + b*x))/(c + d*x)
])*Log[c + d*x] - 4*b*B*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b
*(c + d*x)*Log[c + d*x]) - B*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2
*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*x)^2*Log[c + d*x]) - 2*b^2*B*(
c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)])
- 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*B*(c + d*x)^2*((2*Log
[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2,
(b*(c + d*x))/(b*c - a*d)]))))/(4*d^2*(b*c - a*d)*i^3*(c + d*x)^2)
```

fricas [B] time = 0.89, size = 295, normalized size = 2.09

$$-\frac{2\left(\left(2A^2-2AB+B^2\right)b^2cd-\left(2A^2-2AB+B^2\right)abd^2\right)gx-2\left(B^2b^2d^2gx^2+2B^2abd^2gx+B^2a^2d^2g\right)\log\left(\frac{bex+ae}{dx+c}\right)^{2}\cdots}{4\left(\left(bcd^4-ad^5\right)i^3\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algor
ithm="fricas")
```

```
[Out] -1/4*(2*((2*A^2 - 2*A*B + B^2)*b^2*c*d - (2*A^2 - 2*A*B + B^2)*a*b*d^2)*g*x
 - 2*(B^2*b^2*d^2*g*x^2 + 2*B^2*a*b*d^2*g*x + B^2*a^2*d^2*g)*log((b*e*x + a
*e)/(d*x + c))^2 + ((2*A^2 - 2*A*B + B^2)*b^2*c^2 - (2*A^2 - 2*A*B + B^2)*a
^2*d^2)*g - 2*((2*A*B - B^2)*b^2*d^2*g*x^2 + 2*(2*A*B - B^2)*a*b*d^2*g*x +
(2*A*B - B^2)*a^2*d^2*g)*log((b*e*x + a*e)/(d*x + c)))/((b*c*d^4 - a*d^5)*i
^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3)
```

giac [B] time = 1.50, size = 273, normalized size = 1.94

$$\frac{1}{4}\left(\frac{2\,(bxe+ae)^2B^2gi\log\left(\frac{bxe+ae}{dx+c}\right)^2}{(dx+c)^2}+\frac{4\,(bxe+ae)^2ABgi\log\left(\frac{bxe+ae}{dx+c}\right)}{(dx+c)^2}-\frac{2\,(bxe+ae)^2B^2gi\log\left(\frac{bxe+ae}{dx+c}\right)}{(dx+c)^2}+\frac{2\,(bxe+a\cdots}{(dx+\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algor
ithm="giac")
```

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

maple [B] time = 0.05, size = 2449, normalized size = 17.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)
```

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

maxima [B] time = 2.52, size = 1966, normalized size = 13.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algor
ithm="maxima")
```

```
[Out] -1/2*(2*d*x + c)*B^2*b*g*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(d^4*i^3*x^
2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) + 1/4*(2*((2*b*d*x + 3*b*c - a*d)/((b*c*d^
3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*
i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2
*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3))*log(b*e*x/(d*x + c
) + a*e/(d*x + c)) - (7*b^2*c^2 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*
b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^
```

```
2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x
+ b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b
^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))/(b^2*c^4*d*
i^3 - 2*a*b*c^3*d^2*i^3 + a^2*c^2*d^3*i^3 + (b^2*c^2*d^3*i^3 - 2*a*b*c*d^4*
i^3 + a^2*d^5*i^3)*x^2 + 2*(b^2*c^3*d^2*i^3 - 2*a*b*c^2*d^3*i^3 + a^2*c*d^4
*i^3)*x))*B^2*a*g + 1/4*(2*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c
*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*
d^3)*i^3) + 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 +
a^2*d^4)*i^3) - 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^
3 + a^2*d^4)*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - (b^2*c^3 - 8*a*b*
c^2*d + 7*a^2*c*d^2 + 2*(b^2*c^3 - 2*a*b*c^2*d + (b^2*c*d^2 - 2*a*b*d^3)*x^
2 + 2*(b^2*c^2*d - 2*a*b*c*d^2)*x)*log(b*x + a)^2 + 2*(b^2*c^3 - 2*a*b*c^2*
d + (b^2*c*d^2 - 2*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 2*a*b*c*d^2)*x)*log(d*x +
c)^2 + 2*(b^2*c^2*d - 5*a*b*c*d^2 + 4*a^2*d^3)*x + 2*(b^2*c^3 - 4*a*b*c^2*d
 + (b^2*c*d^2 - 4*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 4*a*b*c*d^2)*x)*log(b*x + a
) - 2*(b^2*c^3 - 4*a*b*c^2*d + (b^2*c*d^2 - 4*a*b*d^3)*x^2 + 2*(b^2*c^2*d -
 4*a*b*c*d^2)*x + 2*(b^2*c^3 - 2*a*b*c^2*d + (b^2*c*d^2 - 2*a*b*d^3)*x^2 +
2*(b^2*c^2*d - 2*a*b*c*d^2)*x)*log(b*x + a))*log(d*x + c))/(b^2*c^4*d^2*i^3
 - 2*a*b*c^3*d^3*i^3 + a^2*c^2*d^4*i^3 + (b^2*c^2*d^4*i^3 - 2*a*b*c*d^5*i^3
 + a^2*d^6*i^3)*x^2 + 2*(b^2*c^3*d^3*i^3 - 2*a*b*c^2*d^4*i^3 + a^2*c*d^5*i^
3)*x))*B^2*b*g - 1/2*A*B*b*g*(2*(2*d*x + c)*log(b*e*x/(d*x + c) + a*e/(d*x
+ c))/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (b*c^2 - 3*a*c*d + 2*(b
*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3
*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) - 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*
c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) + 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((
b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3)) + 1/2*A*B*a*g*((2*b*d*x + 3*b*c
- a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*
d - a*c^2*d^2)*i^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^3*x^2 +
 2*c*d^2*i^3*x + c^2*d*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2
+ a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i
^3)) - 1/2*B^2*a*g*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(d^3*i^3*x^2 + 2*
c*d^2*i^3*x + c^2*d*i^3) - 1/2*(2*d*x + c)*A^2*b*g/(d^4*i^3*x^2 + 2*c*d^3*i
^3*x + c^2*d^2*i^3) - 1/2*A^2*a*g/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)
```

mupad [B] time = 6.40, size = 474, normalized size = 3.36

$$-\frac{x\left(2\,b\,d\,g\,A^2-2\,b\,d\,g\,A\,B+b\,d\,g\,B^2\right)+A^2\,a\,d\,g+A^2\,b\,c\,g+\frac{B^2\,a\,d\,g}{2}+\frac{B^2\,b\,c\,g}{2}-A\,B\,a\,d\,g-A\,B\,b\,c\,g}{2\,c^2\,d^2\,i^3+4\,c\,d^3\,i^3\,x+2\,d^4\,i^3\,x^2}-\ln\left(\frac{e\,(a+b}{c+d\,x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log((e*(a + b*x))/(c + d*x)))^2)/(c*i + d*i*x)^3,
x)
```

```
[Out] (B*b^2*g*atan((((2*a*d^3*i^3 + 2*b*c*d^2*i^3)/(2*d^2*i^3) + 2*b*d*x)*1i)/(a
*d - b*c))*(2*A - B)*1i)/(d^2*i^3*(a*d - b*c)) - log((e*(a + b*x))/(c + d*x
))^2*(((B^2*a*g)/(2*d^2*i^3) + (B^2*b*c*g)/(2*d^3*i^3) + (B^2*b*g*x)/(d^2*i
^3))/(2*c*x + d*x^2 + c^2/d) + (B^2*b^2*g)/(2*d^2*i^3*(a*d - b*c))) - (log(
(e*(a + b*x))/(c + d*x))*((A*B*c*g)/(d^3*i^3) - x*((B^2*g)/(d^2*i^3) - (2*A
*B*g)/(d^2*i^3)) + (B*g*(A*a*d - B*a*d + B*b*c))/(b*d^3*i^3) + (B^2*b^2*g*(
(a^2*d^2 + 2*b^2*c^2 - 3*a*b*c*d)/(2*b^3*d) - (c*(a*d - b*c))/(2*b^2*d)))/(
d^2*i^3*(a*d - b*c))))/((d*x^2)/b + c^2/(b*d) + (2*c*x)/b) - (x*(2*A^2*b*d*
g + B^2*b*d*g - 2*A*B*b*d*g) + A^2*a*d*g + A^2*b*c*g + (B^2*a*d*g)/2 + (B^2
*b*c*g)/2 - A*B*a*d*g - A*B*b*c*g)/(2*c^2*d^2*i^3 + 2*d^4*i^3*x^2 + 4*c*d^3
*i^3*x)
```

sympy [B] time = 13.80, size = 712, normalized size = 5.05

$$\frac{Bb^2g\left(2A-B\right)\log\left(x+\frac{2ABab^2dg+2ABb^3cg-B^2ab^2dg-B^2b^3cg-\frac{Ba^2b^2d^2g(2A-B)}{ad-bc}+\frac{2Bab^3cdg(2A-B)}{ad-bc}-\frac{Bb^4c^2g(2A-B)}{ad-bc}}{4ABb^3dg-2B^2b^3dg}\right)}{2d^2i^3\left(ad-bc\right)}-\frac{Bb^2g\left(2A-B\right)\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**3,x)
```

```
[Out] B*b**2*g*(2*A - B)*log(x + (2*A*B*a*b**2*d*g + 2*A*B*b**3*c*g - B**2*a*b**2
*d*g - B**2*b**3*c*g - B*a**2*b**2*d**2*g*(2*A - B)/(a*d - b*c) + 2*B*a*b**
3*c*d*g*(2*A - B)/(a*d - b*c) - B*b**4*c**2*g*(2*A - B)/(a*d - b*c))/(4*A*B
*b**3*d*g - 2*B**2*b**3*d*g))/(2*d**2*i**3*(a*d - b*c)) - B*b**2*g*(2*A - B
)*log(x + (2*A*B*a*b**2*d*g + 2*A*B*b**3*c*g - B**2*a*b**2*d*g - B**2*b**3*
c*g + B*a**2*b**2*d**2*g*(2*A - B)/(a*d - b*c) - 2*B*a*b**3*c*d*g*(2*A - B)
/(a*d - b*c) + B*b**4*c**2*g*(2*A - B)/(a*d - b*c))/(4*A*B*b**3*d*g - 2*B**
2*b**3*d*g))/(2*d**2*i**3*(a*d - b*c)) + (-B**2*a**2*g - 2*B**2*a*b*g*x - B
**2*b**2*g*x**2)*log(e*(a + b*x)/(c + d*x))**2/(2*a*c**2*d*i**3 + 4*a*c*d**
2*i**3*x + 2*a*d**3*i**3*x**2 - 2*b*c**3*i**3 - 4*b*c**2*d*i**3*x - 2*b*c*d
**2*i**3*x**2) + (-2*A**2*a*d*g - 2*A**2*b*c*g + 2*A*B*a*d*g + 2*A*B*b*c*g
- B**2*a*d*g - B**2*b*c*g + x*(-4*A**2*b*d*g + 4*A*B*b*d*g - 2*B**2*b*d*g))
/(4*c**2*d**2*i**3 + 8*c*d**3*i**3*x + 4*d**4*i**3*x**2) + (-2*A*B*a*d*g -
2*A*B*b*c*g - 4*A*B*b*d*g*x + B**2*a*d*g + B**2*b*c*g + 2*B**2*b*d*g*x)*log
(e*(a + b*x)/(c + d*x))/(2*c**2*d**2*i**3 + 4*c*d**3*i**3*x + 2*d**4*i**3*x
**2)
```

3.103 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ci+dix)^3}\,dx$

Optimal. Leaf size=296

$$\frac{Bd(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2i^3(c+dx)^2(bc-ad)^2}+\frac{b(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{i^3(c+dx)(bc-ad)^2}-\frac{d(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2i^3(c+dx)^2(bc-ad)^2}-\frac{2AbB}{i^3(c+dx}$$

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

Rubi [C] time = 0.91, antiderivative size = 577, normalized size of antiderivative = 1.95, number of steps used = 30, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {2525, 12, 2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{b^2B^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{di^3(bc-ad)^2}+\frac{b^2B^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{di^3(bc-ad)^2}+\frac{b^2B\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{di^3(bc-ad)^2}-\frac{b^2B\log(c+dx)\left(B\right.}{di^3(bc}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/(c*i + d*i*x)^3,x]
```

```
[Out] -B^2/(4*d*i^3*(c + d*x)^2) - (3*b*B^2)/(2*d*(b*c - a*d)*i^3*(c + d*x)) - (3
*b^2*B^2*Log[a + b*x])/(2*d*(b*c - a*d)^2*i^3) - (b^2*B^2*Log[a + b*x]^2)/(
2*d*(b*c - a*d)^2*i^3) + (B*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*d*i^3*
(c + d*x)^2) + (b*B*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d*(b*c - a*d)*i^
3*(c + d*x)) + (b^2*B*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(d
*(b*c - a*d)^2*i^3) - (A + B*Log[(e*(a + b*x))/(c + d*x)])^2/(2*d*i^3*(c +
d*x)^2) + (3*b^2*B^2*Log[c + d*x])/(2*d*(b*c - a*d)^2*i^3) + (b^2*B^2*Log[-
((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d*(b*c - a*d)^2*i^3) - (b^2*B*(
A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(d*(b*c - a*d)^2*i^3) - (
b^2*B^2*Log[c + d*x]^2)/(2*d*(b*c - a*d)^2*i^3) + (b^2*B^2*Log[a + b*x]*Log
[(b*(c + d*x))/(b*c - a*d)])/(d*(b*c - a*d)^2*i^3) + (b^2*B^2*PolyLog[2, -(
(d*(a + b*x))/(b*c - a*d))])/(d*(b*c - a*d)^2*i^3) + (b^2*B^2*PolyLog[2, (b
*(c + d*x))/(b*c - a*d)])/(d*(b*c - a*d)^2*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(103c+103dx)^3}\,dx = -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2185454d(c+dx)^2}+\frac{B\int\frac{(bc-ad)\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{10609(a+bx)(c+dx)^3}dx}{103d}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2185454d(c+dx)^2}+\frac{(B(bc-ad))\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(a+bx)(c+dx)^3}dx}{1092727d}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2185454d(c+dx)^2}+\frac{(B(bc-ad))\int\left(\frac{b^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(bc-ad)^3(a+bx)}-\frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{(bc-ad)(c+dx)^3}-\right.}{1092727d}$$

$$= -\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2185454d(c+dx)^2}-\frac{B\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{(c+dx)^3}dx}{1092727}-\frac{\left(b^2B\right)\int\frac{A+B\log\left(\frac{e(a+bx)}{c+dx}\right)}{c+dx}dx}{1092727(bc-ad)^2}+\frac{(b}{}$$

$$= \frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2185454d(c+dx)^2}+\frac{bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1092727d(bc-ad)(c+dx)}+\frac{b^2B\log(a+bx)\left(A+B\log\right.}{1092727d(bc-a}$$

$$= \frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2185454d(c+dx)^2}+\frac{bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1092727d(bc-ad)(c+dx)}+\frac{b^2B\log(a+bx)\left(A+B\log\right.}{1092727d(bc-a}$$

$$= \frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2185454d(c+dx)^2}+\frac{bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1092727d(bc-ad)(c+dx)}+\frac{b^2B\log(a+bx)\left(A+B\log\right.}{1092727d(bc-a}$$

$$= -\frac{B^2}{4370908d(c+dx)^2}-\frac{3bB^2}{2185454d(bc-ad)(c+dx)}-\frac{3b^2B^2\log(a+bx)}{2185454d(bc-ad)^2}+\frac{B\left(A\right.}{218}$$

$$= -\frac{B^2}{4370908d(c+dx)^2}-\frac{3bB^2}{2185454d(bc-ad)(c+dx)}-\frac{3b^2B^2\log(a+bx)}{2185454d(bc-ad)^2}+\frac{B\left(A\right.}{218}$$

$$= -\frac{B^2}{4370908d(c+dx)^2}-\frac{3bB^2}{2185454d(bc-ad)(c+dx)}-\frac{3b^2B^2\log(a+bx)}{2185454d(bc-ad)^2}-\frac{b^2B}{2185}$$

$$= -\frac{B^2}{4370908d(c+dx)^2}-\frac{3bB^2}{2185454d(bc-ad)(c+dx)}-\frac{3b^2B^2\log(a+bx)}{2185454d(bc-ad)^2}-\frac{b^2B}{2185}$$

Mathematica [C] time = 0.43, size = 444, normalized size = 1.50

$$\frac{B\left(4b^2(c+dx)^2\log(a+bx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)-4b^2(c+dx)^2\log(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+2(bc-ad)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)+4b(c+dx)(bc-ad)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/(c*i + d*i*x)^3,x]
```

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

```
2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyL
og[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*B*(c + d*x)^2*((2*Log[(d*(a +
b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d
*x))/(b*c - a*d)])))/(b*c - a*d)^2)/(4*d*i^3*(c + d*x)^2)
```

fricas [A] time = 0.67, size = 373, normalized size = 1.26

$$-\frac{\left(2A^2-6AB+7B^2\right)b^2c^2-4\left(A^2-2AB+2B^2\right)abcd+\left(2A^2-2AB+B^2\right)a^2d^2-2\left(B^2b^2d^2x^2+2B^2b^2cdx\right.}{4\left(\left(b^2c^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorithm="fricas
")
```

```
[Out] -1/4*((2*A^2 - 6*A*B + 7*B^2)*b^2*c^2 - 4*(A^2 - 2*A*B + 2*B^2)*a*b*c*d + (
2*A^2 - 2*A*B + B^2)*a^2*d^2 - 2*(B^2*b^2*d^2*x^2 + 2*B^2*b^2*c*d*x + 2*B^2
*a*b*c*d - B^2*a^2*d^2)*log((b*e*x + a*e)/(d*x + c))^2 - 2*((2*A*B - 3*B^2)
*b^2*c*d - (2*A*B - 3*B^2)*a*b*d^2)*x - 2*((2*A*B - 3*B^2)*b^2*d^2*x^2 + 4*
(A*B - B^2)*a*b*c*d - (2*A*B - B^2)*a^2*d^2 - 2*(B^2*a*b*d^2 - 2*(A*B - B^2
)*b^2*c*d)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^2*c^2*d^3 - 2*a*b*c*d^4 + a
^2*d^5)*i^3*x^2 + 2*(b^2*c^3*d^2 - 2*a*b*c^2*d^3 + a^2*c*d^4)*i^3*x + (b^2*
c^4*d - 2*a*b*c^3*d^2 + a^2*c^2*d^3)*i^3)
```

giac [A] time = 1.43, size = 499, normalized size = 1.69

$$\left(\frac{4\,(bxe+ae)B^2bie\log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c}+\frac{8\,(bxe+ae)ABbie\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c}-\frac{8\,(bxe+ae)B^2bie\log\left(\frac{bxe+ae}{dx+c}\right)}{dx+c}-\frac{2\,(bxe+ae)^2B^2di\log\left(\frac{bxe+ae}{dx+c}\right)^2}{(dx+c)^2}+\frac{4\,(bxe+ae)A^2}{dx+c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorithm="giac")
```

```
[Out] 1/4*(4*(b*x*e + a*e)*B^2*b*i*e*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c) + 8
*(b*x*e + a*e)*A*B*b*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 8*(b*x*e
+ a*e)*B^2*b*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c) - 2*(b*x*e + a*e)^2
*B^2*d*i*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c)^2 + 4*(b*x*e + a*e)*A^2*b
*i*e/(d*x + c) - 8*(b*x*e + a*e)*A*B*b*i*e/(d*x + c) + 8*(b*x*e + a*e)*B^2*
b*i*e/(d*x + c) - 4*(b*x*e + a*e)^2*A*B*d*i*log((b*x*e + a*e)/(d*x + c))/(d
*x + c)^2 + 2*(b*x*e + a*e)^2*B^2*d*i*log((b*x*e + a*e)/(d*x + c))/(d*x + c
)^2 - 2*(b*x*e + a*e)^2*A^2*d*i/(d*x + c)^2 + 2*(b*x*e + a*e)^2*A*B*d*i/(d*
x + c)^2 - (b*x*e + a*e)^2*B^2*d*i/(d*x + c)^2)*(b*c/((b*c*e - a*d*e)*(b*c
- a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))/(b*c*e - a*d*e)
```

maple [B] time = 0.05, size = 1917, normalized size = 6.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(d*i*x+c*i)^3,x)
```

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

```
*x+c)^2*b^2*c^2*a+1/(a*d-b*c)^3/i^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2
*a-1/d/(a*d-b*c)^3/i^3*A*B*b^3/(d*x+c)*c^2+1/2/d/(a*d-b*c)^3/i^3*A^2/(d*x+c
)^2*b^3*c^3+1/4/d/(a*d-b*c)^3/i^3*B^2/(d*x+c)^2*b^3*c^3+3/2/d/(a*d-b*c)^3/i
^3*B^2*b^3/(d*x+c)*c^2-1/2*d^2/(a*d-b*c)^3/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)^2/(d*x+c)^2*a^3+1/2*d^2/(a*d-b*c)^3/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)/(d*x+c)^2*a^3+3/2/d/(a*d-b*c)^3/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)*b^3*c-1/2/d/(a*d-b*c)^3/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3
*c+1/2/(a*d-b*c)^3/i^3*A^2*b^2*a-1/2/d/(a*d-b*c)^3/i^3*A^2*b^3*c+7/4/(a*d-b
*c)^3/i^3*B^2*b^2*a-1/d/(a*d-b*c)^3/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
*b^3/(d*x+c)*c^2+2/(a*d-b*c)^3/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/
(d*x+c)*a*c-1/d/(a*d-b*c)^3/i^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c-3
/2/(a*d-b*c)^3/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*b^2*c^2*
a+3/2*d/(a*d-b*c)^3/i^3*A^2/(d*x+c)^2*a^2*b*c-d/(a*d-b*c)^3/i^3*A*B*b/(d*x+
c)*a^2-3/(a*d-b*c)^3/i^3*B^2*b^2/(d*x+c)*a*c+1/2*d^2/(a*d-b*c)^3/i^3*A*B/(d
*x+c)^2*a^3+3/2*d/(a*d-b*c)^3/i^3*B^2*b/(d*x+c)*a^2-7/4/d/(a*d-b*c)^3/i^3*B
^2*b^3*c+3/4*d/(a*d-b*c)^3/i^3*B^2/(d*x+c)^2*a^2*b*c+2/(a*d-b*c)^3/i^3*A*B*
b^2/(d*x+c)*a*c-1/2/d/(a*d-b*c)^3/i^3*A*B/(d*x+c)^2*b^3*c^3-1/2/d/(a*d-b*c)
^3/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3+3/2/(a*d-b*c)^
3/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^2*c^2*a+1/2/d/(a*d-b*
c)^3/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*b^3*c^3-3/(a*d-b*c
)^3/i^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2+3/2*d/(a*d-
b*c)^3/i^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^2*b*c-3/2*d/(a
*d-b*c)^3/i^3*A*B/(d*x+c)^2*a^2*b*c+1/d/(a*d-b*c)^3/i^3*A*B*ln(b/d*e+(a*d-b
*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-3/2*d/(a*d-b*c)^3/i^3*B^2*ln(b/d*e+(a*d-
b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c+3*d/(a*d-b*c)^3/i^3*A*B*ln(b/d*e+(a*d-b
*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c
```

maxima [B] time = 1.46, size = 848, normalized size = 2.86

$$\frac{1}{4}\left(2\left(\frac{2\,bdx+3\,bc-ad}{\left(bcd^3-ad^4\right)i^3x^2+2\left(bc^2d^2-acd^3\right)i^3x+\left(bc^3d-ac^2d^2\right)i^3}+\frac{2\,b^2\log\left(bx+a\right)}{\left(b^2c^2d-2\,abcd^2+a^2d^3\right)i^3}-\frac{2\,b^2\log\left(dx\right.}{\left(b^2c^2d-2\,abcd^2\right.}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(d*i*x+c*i)^3,x, algorithm="maxima
")
```

```
[Out] 1/4*(2*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 -
 a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2
*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c
*d^2 + a^2*d^3)*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - (7*b^2*c^2 - 8
*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2
 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a*
b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2*
d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)
*log(b*x + a))*log(d*x + c))/(b^2*c^4*d*i^3 - 2*a*b*c^3*d^2*i^3 + a^2*c^2*d
^3*i^3 + (b^2*c^2*d^3*i^3 - 2*a*b*c*d^4*i^3 + a^2*d^5*i^3)*x^2 + 2*(b^2*c^3
*d^2*i^3 - 2*a*b*c^2*d^3*i^3 + a^2*c*d^4*i^3)*x))*B^2 + 1/2*A*B*((2*b*d*x +
 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x +
(b*c^3*d - a*c^2*d^2)*i^3) - 2*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(d^3*i^
3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b
*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2
*d^3)*i^3)) - 1/2*B^2*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2/(d^3*i^3*x^2 +
 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*
i^3)
```

mupad [B] time = 6.48, size = 507, normalized size = 1.71

$$-\frac{\frac{2A^2ad-2A^2bc+B^2ad-7B^2bc-2ABad+6ABbc}{2(ad-bc)}-\frac{x\left(3B^2bd-2ABbd\right)}{ad-bc}}{2c^2di^3+4cd^2i^3x+2d^3i^3x^2}-\ln\left(\frac{e\,(a+bx)}{c+dx}\right)^2\left(\frac{B^2}{2d^2i^3\left(2cx+dx^2+\frac{c^2}{d}\right)}-\ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/(c*i + d*i*x)^3,x)
```

```
[Out] (B*b^2*atan((B*b^2*(2*b*d*x + (a^2*d^3*i^3 - b^2*c^2*d*i^3)/(d*i^3*(a*d - b
*c)))*(2*A - 3*B)*1i)/((a*d - b*c)*(3*B^2*b^2 - 2*A*B*b^2)))*(2*A - 3*B)*1i
)/(d*i^3*(a*d - b*c)^2) - log((e*(a + b*x))/(c + d*x))^2*(B^2/(2*d^2*i^3*(2
*c*x + d*x^2 + c^2/d)) - (B^2*b^2)/(2*d*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)
)) - (log((e*(a + b*x))/(c + d*x))*((A*B)/(b*d^2*i^3) + (B^2*x*(a*d - b*c))
/(d*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B^2*b^2*((a^2*d^2 + 2*b^2*c^2 -
 3*a*b*c*d)/(2*b^3*d) - (c*(a*d - b*c))/(2*b^2*d)))/(d*i^3*(a^2*d^2 + b^2*c
^2 - 2*a*b*c*d))))/((d*x^2)/b + c^2/(b*d) + (2*c*x)/b) - ((2*A^2*a*d - 2*A^
2*b*c + B^2*a*d - 7*B^2*b*c - 2*A*B*a*d + 6*A*B*b*c)/(2*(a*d - b*c)) - (x*(
3*B^2*b*d - 2*A*B*b*d))/(a*d - b*c))/(2*c^2*d*i^3 + 2*d^3*i^3*x^2 + 4*c*d^2
*i^3*x)
```

sympy [B] time = 6.18, size = 892, normalized size = 3.01

$$-\frac{Bb^2\,(2A-3B)\log\left(x+\frac{2ABab^2d+2ABb^3c-3B^2ab^2d-3B^2b^3c-\frac{Ba^3b^2d^3(2A-3B)}{(ad-bc)^2}+\frac{3Ba^2b^3cd^2(2A-3B)}{(ad-bc)^2}-\frac{3Bab^4c^2d(2A-3B)}{(ad-bc)^2}+\frac{Bb^5c^3(2A-3B)}{(ad-bc)^2}}{4ABb^3d-6B^2b^3d}\right)}{2di^3\,(ad-bc)^2}+\ldots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(d*i*x+c*i)**3,x)
```

```
[Out] -B*b**2*(2*A - 3*B)*log(x + (2*A*B*a*b**2*d + 2*A*B*b**3*c - 3*B**2*a*b**2*
d - 3*B**2*b**3*c - B*a**3*b**2*d**3*(2*A - 3*B)/(a*d - b*c)**2 + 3*B*a**2*
b**3*c*d**2*(2*A - 3*B)/(a*d - b*c)**2 - 3*B*a*b**4*c**2*d*(2*A - 3*B)/(a*d
 - b*c)**2 + B*b**5*c**3*(2*A - 3*B)/(a*d - b*c)**2)/(4*A*B*b**3*d - 6*B**2
*b**3*d))/(2*d*i**3*(a*d - b*c)**2) + B*b**2*(2*A - 3*B)*log(x + (2*A*B*a*b
**2*d + 2*A*B*b**3*c - 3*B**2*a*b**2*d - 3*B**2*b**3*c + B*a**3*b**2*d**3*(
2*A - 3*B)/(a*d - b*c)**2 - 3*B*a**2*b**3*c*d**2*(2*A - 3*B)/(a*d - b*c)**2
 + 3*B*a*b**4*c**2*d*(2*A - 3*B)/(a*d - b*c)**2 - B*b**5*c**3*(2*A - 3*B)/(
a*d - b*c)**2)/(4*A*B*b**3*d - 6*B**2*b**3*d))/(2*d*i**3*(a*d - b*c)**2) +
(-B**2*a**2*d + 2*B**2*a*b*c + 2*B**2*b**2*c*x + B**2*b**2*d*x**2)*log(e*(a
 + b*x)/(c + d*x))**2/(2*a**2*c**2*d**2*i**3 + 4*a**2*c*d**3*i**3*x + 2*a**
2*d**4*i**3*x**2 - 4*a*b*c**3*d*i**3 - 8*a*b*c**2*d**2*i**3*x - 4*a*b*c*d**
3*i**3*x**2 + 2*b**2*c**4*i**3 + 4*b**2*c**3*d*i**3*x + 2*b**2*c**2*d**2*i*
*3*x**2) + (-2*A*B*a*d + 2*A*B*b*c + B**2*a*d - 3*B**2*b*c - 2*B**2*b*d*x)*
log(e*(a + b*x)/(c + d*x))/(2*a*c**2*d**2*i**3 + 4*a*c*d**3*i**3*x + 2*a*d*
*4*i**3*x**2 - 2*b*c**3*d*i**3 - 4*b*c**2*d**2*i**3*x - 2*b*c*d**3*i**3*x**
2) + (-2*A**2*a*d + 2*A**2*b*c + 2*A*B*a*d - 6*A*B*b*c - B**2*a*d + 7*B**2*
b*c + x*(-4*A*B*b*d + 6*B**2*b*d))/(4*a*c**2*d**2*i**3 - 4*b*c**3*d*i**3 +
x**2*(4*a*d**4*i**3 - 4*b*c*d**3*i**3) + x*(8*a*c*d**3*i**3 - 8*b*c**2*d**2
*i**3))
```

3.104 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)(ci+dix)^3}\,dx$

Optimal. Leaf size=375

$$\frac{b^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^3}{3Bgi^3(bc-ad)^3}+\frac{d^2(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2gi^3(c+dx)^2(bc-ad)^3}-\frac{Bd^2(a+bx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2gi^3(c+dx)^2(bc-ad)^3}-\frac{2bd(a+bx)\left(\right.}{gi^3(c+}$$

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

Rubi [C] time = 7.37, antiderivative size = 1899, normalized size of antiderivative = 5.06, number of steps used = 117, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.738, Rules used = {2528, 2524, 12, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2525, 44, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)*(c*i + d*i*x)^3),
x]
```

```
[Out] B^2/(4*(b*c - a*d)*g*i^3*(c + d*x)^2) + (7*b*B^2)/(2*(b*c - a*d)^2*g*i^3*(c
 + d*x)) + (7*b^2*B^2*Log[a + b*x])/(2*(b*c - a*d)^3*g*i^3) - (A*b^2*B*Log[
a + b*x]^2)/((b*c - a*d)^3*g*i^3) + (3*b^2*B^2*Log[a + b*x]^2)/(2*(b*c - a*
d)^3*g*i^3) + (b^2*B^2*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)^3*g
*i^3) - (b^2*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/(
(b*c - a*d)^3*g*i^3) - (b^2*B^2*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[(e*(a
 + b*x))/(c + d*x)]^2)/((b*c - a*d)^3*g*i^3) - (b^2*B^2*Log[a + b*x]*Log[(e
*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^3*g*i^3) - (B*(A + B*Log[(e*(a + b*x
))/(c + d*x)]))/(2*(b*c - a*d)*g*i^3*(c + d*x)^2) - (3*b*B*(A + B*Log[(e*(a
 + b*x))/(c + d*x)]))/((b*c - a*d)^2*g*i^3*(c + d*x)) - (3*b^2*B*Log[a + b*
x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^3*g*i^3) + (A + B*Log
[(e*(a + b*x))/(c + d*x)])^2/(2*(b*c - a*d)*g*i^3*(c + d*x)^2) + (b*(A + B*
Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^2*g*i^3*(c + d*x)) + (b^2*Log
[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^3*g*i^3) - (
7*b^2*B^2*Log[c + d*x])/(2*(b*c - a*d)^3*g*i^3) + (b^2*B^2*Log[a + b*x]^2*L
og[c + d*x])/((b*c - a*d)^3*g*i^3) + (2*A*b^2*B*Log[-((d*(a + b*x))/(b*c -
a*d))]*Log[c + d*x])/((b*c - a*d)^3*g*i^3) - (3*b^2*B^2*Log[-((d*(a + b*x))
/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*Log[a + b*x
]*Log[(c + d*x)^(-1)]*Log[c + d*x])/((b*c - a*d)^3*g*i^3) - (2*b^2*B^2*Log[
-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*
(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*d)^3*g*i^3) + (3*b^2*B*(A +
B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*d)^3*g*i^3) - (b^2*
(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Log[c + d*x])/((b*c - a*d)^3*g*i^3)
- (A*b^2*B*Log[c + d*x]^2)/((b*c - a*d)^3*g*i^3) + (3*b^2*B^2*Log[c + d*x]^
2)/(2*(b*c - a*d)^3*g*i^3) + (b^2*B^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c -
a*d)^3*g*i^3) - (b^2*B^2*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/((b*c
 - a*d)^3*g*i^3) - (b^2*B^2*Log[c + d*x]^3)/(3*(b*c - a*d)^3*g*i^3) + (2*A*
b^2*B*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) -
(3*b^2*B^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^
```

```
3) - (b^2*B^2*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3
*g*i^3) + (2*A*b^2*B*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)
^3*g*i^3) - (3*b^2*B^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*
d)^3*g*i^3) - (2*b^2*B^2*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d
))])/((b*c - a*d)^3*g*i^3) + (2*A*b^2*B*PolyLog[2, (b*(c + d*x))/(b*c - a*d
)])/((b*c - a*d)^3*g*i^3) - (3*b^2*B^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
])/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c
+ d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) - (2*b^2*B^2*(Log[a + b*x] + Lo
g[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c + d*x))/
(b*c - a*d)])/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*Log[(e*(a + b*x))/(c + d*x
)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^3*g*i^3) + (2*b^
2*B^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g*i^3) + (2*
b^2*B^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) + (2*b
^2*B^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^3*g*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
```

```
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
```

```
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
```

```
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(104c+104dx)^3(ag+bgx)}\,dx = \int \left(\frac{b^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc-ad)^3g(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc-ad)g(c+dx)^3} - \frac{bd\left(A+B\right.}{1124864(bc\cdots}\right.$$

$$= \frac{b^3\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}dx}{1124864(bc-ad)^3g} - \frac{\left(b^2d\right)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}dx}{1124864(bc-ad)^3g} - \frac{(bd)\int\frac{\left(A+B\log\left(\frac{e(a+bx}{c+dx}\right.\right.}{(c+dx)^2}}{1124864(bc-ad\cdots}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2249728(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+bx)\cdots}{11248\cdots}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2249728(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+bx)\cdots}{11248\cdots}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2249728(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+bx)\cdots}{11248\cdots}$$

$$= \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2249728(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1124864(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+bx)\cdots}{11248\cdots}$$

$$= -\frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2249728(bc-ad)g(c+dx)^2} - \frac{3bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1124864(bc-ad)^2g(c+dx)} - \frac{3b^2B\log(a+\cdots}{112\cdots}$$

$$= -\frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2249728(bc-ad)g(c+dx)^2} - \frac{3bB\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1124864(bc-ad)^2g(c+dx)} - \frac{3b^2B\log(a+\cdots}{112\cdots}$$

$$= -\frac{b^2B^2\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{1124864(bc-ad)^3g} - \frac{B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2249728(bc-ad)g(c+dx)^2} - \frac{3bB\left(A+\cdots\right.}{1124864(b\cdots}$$

$$= \frac{B^2}{4499456(bc-ad)g(c+dx)^2} + \frac{7bB^2}{2249728(bc-ad)^2g(c+dx)} + \frac{7b^2B^2\log(a+\cdots}{2249728(bc-\cdots}$$

$$= \frac{B^2}{4499456(bc-ad)g(c+dx)^2} + \frac{7bB^2}{2249728(bc-ad)^2g(c+dx)} + \frac{7b^2B^2\log(a+\cdots}{2249728(bc-\cdots}$$

$$= \frac{B^2}{4499456(bc-ad)g(c+dx)^2} + \frac{7bB^2}{2249728(bc-ad)^2g(c+dx)} + \frac{7b^2B^2\log(a+\cdots}{2249728(bc-\cdots}$$

$$= \frac{B^2}{4499456(bc-ad)g(c+dx)^2} + \frac{7bB^2}{2249728(bc-ad)^2g(c+dx)} + \frac{7b^2B^2\log(a+\cdots}{2249728(bc-\cdots}$$

$$= \frac{B^2}{4499456(bc-ad)g(c+dx)^2} + \frac{7bB^2}{2249728(bc-ad)^2g(c+dx)} + \frac{7b^2B^2\log(a+\cdots}{2249728(bc-\cdots}$$

$$= \frac{B^2}{4499456(bc-ad)g(c+dx)^2} + \frac{7bB^2}{2249728(bc-ad)^2g(c+dx)} + \frac{7b^2B^2\log(a+\cdots}{2249728(bc-\cdots}$$

Mathematica [A] time = 1.26, size = 290, normalized size = 0.77

$$6b^2\left(2A^2-6AB+7B^2\right)\log(a+bx)+\frac{6b\left(2A^2-6AB+7B^2\right)(bc-ad)}{c+dx}+\frac{3\left(2A^2-2AB+B^2\right)(bc-ad)^2}{(c+dx)^2}+\frac{6B\left(Bd(a+bx)(ad-4bc-3bdx)+2A\right.}{(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)*(c*i + d*i*
x)^3),x]
```

```
[Out] ((3*(2*A^2 - 2*A*B + B^2)*(b*c - a*d)^2)/(c + d*x)^2 + (6*b*(2*A^2 - 6*A*B
+ 7*B^2)*(b*c - a*d))/(c + d*x) + 6*b^2*(2*A^2 - 6*A*B + 7*B^2)*Log[a + b*x
] + (6*B*(b*c - a*d)*(B*(-7*b*c + a*d - 6*b*d*x) + A*(6*b*c - 2*a*d + 4*b*d
*x))*Log[(e*(a + b*x))/(c + d*x)])/(c + d*x)^2 + (6*B*(2*A*b^2*(c + d*x)^2
+ B*d*(a + b*x)*(-4*b*c + a*d - 3*b*d*x))*Log[(e*(a + b*x))/(c + d*x)]^2)/(
c + d*x)^2 + 4*b^2*B^2*Log[(e*(a + b*x))/(c + d*x)]^3 - 6*b^2*(2*A^2 - 6*A*
B + 7*B^2)*Log[c + d*x])/(12*(b*c - a*d)^3*g*i^3)
```

fricas [A] time = 1.06, size = 545, normalized size = 1.45

$$3\left(6A^2-14AB+15B^2\right)b^2c^2-24\left(A^2-2AB+2B^2\right)abcd+3\left(2A^2-2AB+B^2\right)a^2d^2+4\left(B^2b^2d^2x^2+2B^2b\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algor
ithm="fricas")
```

```
[Out] 1/12*(3*(6*A^2 - 14*A*B + 15*B^2)*b^2*c^2 - 24*(A^2 - 2*A*B + 2*B^2)*a*b*c*
d + 3*(2*A^2 - 2*A*B + B^2)*a^2*d^2 + 4*(B^2*b^2*d^2*x^2 + 2*B^2*b^2*c*d*x
+ B^2*b^2*c^2)*log((b*e*x + a*e)/(d*x + c))^3 + 6*((2*A*B - 3*B^2)*b^2*d^2*
x^2 + 2*A*B*b^2*c^2 - 4*B^2*a*b*c*d + B^2*a^2*d^2 - 2*(B^2*a*b*d^2 - 2*(A*B
 - B^2)*b^2*c*d)*x)*log((b*e*x + a*e)/(d*x + c))^2 + 6*((2*A^2 - 6*A*B + 7*
B^2)*b^2*c*d - (2*A^2 - 6*A*B + 7*B^2)*a*b*d^2)*x + 6*((2*A^2 - 6*A*B + 7*B
^2)*b^2*d^2*x^2 + 2*A^2*b^2*c^2 - 8*(A*B - B^2)*a*b*c*d + (2*A*B - B^2)*a^2
*d^2 + 2*(2*(A^2 - 2*A*B + 2*B^2)*b^2*c*d - (2*A*B - 3*B^2)*a*b*d^2)*x)*log
((b*e*x + a*e)/(d*x + c)))/((b^3*c^3*d^2 - 3*a*b^2*c^2*d^3 + 3*a^2*b*c*d^4
- a^3*d^5)*g*i^3*x^2 + 2*(b^3*c^4*d - 3*a*b^2*c^3*d^2 + 3*a^2*b*c^2*d^3 - a
^3*c*d^4)*g*i^3*x + (b^3*c^5 - 3*a*b^2*c^4*d + 3*a^2*b*c^3*d^2 - a^3*c^2*d^
3)*g*i^3)
```

giac [A] time = 1.56, size = 628, normalized size = 1.67

$$\left(4B^2b^2ie^2\log\left(\frac{bxe+ae}{dx+c}\right)^3+12ABb^2ie^2\log\left(\frac{bxe+ae}{dx+c}\right)^2-\frac{24(bxe+ae)B^2bdie\log\left(\frac{bxe+ae}{dx+c}\right)^2}{dx+c}+12A^2b^2ie^2\log\left(\frac{bxe+ae}{dx+c}\right)-\frac{48(bx}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algor
ithm="giac")
```

```
[Out] 1/12*(4*B^2*b^2*i*e^2*log((b*x*e + a*e)/(d*x + c))^3 + 12*A*B*b^2*i*e^2*log
((b*x*e + a*e)/(d*x + c))^2 - 24*(b*x*e + a*e)*B^2*b*d*i*e*log((b*x*e + a*e
)/(d*x + c))^2/(d*x + c) + 12*A^2*b^2*i*e^2*log((b*x*e + a*e)/(d*x + c)) -
48*(b*x*e + a*e)*A*B*b*d*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 48*(b
*x*e + a*e)*B^2*b*d*i*e*log((b*x*e + a*e)/(d*x + c))/(d*x + c) + 6*(b*x*e +
 a*e)^2*B^2*d^2*i*log((b*x*e + a*e)/(d*x + c))^2/(d*x + c)^2 - 24*(b*x*e +
```

```
a*e)*A^2*b*d*i*e/(d*x + c) + 48*(b*x*e + a*e)*A*B*b*d*i*e/(d*x + c) - 48*(b
*x*e + a*e)*B^2*b*d*i*e/(d*x + c) + 12*(b*x*e + a*e)^2*A*B*d^2*i*log((b*x*e
 + a*e)/(d*x + c))/(d*x + c)^2 - 6*(b*x*e + a*e)^2*B^2*d^2*i*log((b*x*e + a
*e)/(d*x + c))/(d*x + c)^2 + 6*(b*x*e + a*e)^2*A^2*d^2*i/(d*x + c)^2 - 6*(b
*x*e + a*e)^2*A*B*d^2*i/(d*x + c)^2 + 3*(b*x*e + a*e)^2*B^2*d^2*i/(d*x + c)
^2)*(b*c/((b*c*e - a*d*e)*(b*c - a*d)) - a*d/((b*c*e - a*d*e)*(b*c - a*d)))
/(b^2*c^2*g*e - 2*a*b*c*d*g*e + a^2*d^2*g*e)
```

maple [B] time = 0.05, size = 2842, normalized size = 7.58

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x)
```

```
[Out] -2*d/i^3/(a*d-b*c)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2/(d*x+c)*a*
c+1/i^3/(a*d-b*c)^4/g*A^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+7/2/i^3/(a*
d-b*c)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c+1/3/i^3/(a*d-b*c)^4/g*
B^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*c-3/2/i^3/(a*d-b*c)^4/g*B^2*ln(b/
d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3*c-1/4*d^3/i^3/(a*d-b*c)^4/g*B^2/(d*x+c)^2*
a^3-1/2*d^3/i^3/(a*d-b*c)^4/g*A^2/(d*x+c)^2*a^3+7/2/i^3/(a*d-b*c)^4/g*B^2*b
^3/(d*x+c)*c^2-3/2/i^3/(a*d-b*c)^4/g*A^2*b^3*c+1/4/i^3/(a*d-b*c)^4/g*B^2/(d
*x+c)^2*b^3*c^3+1/i^3/(a*d-b*c)^4/g*A^2*b^3/(d*x+c)*c^2+1/2/i^3/(a*d-b*c)^4
/g*A^2/(d*x+c)^2*b^3*c^3-3/i^3/(a*d-b*c)^4/g*A*B*b^3/(d*x+c)*c^2-1/2/i^3/(a
*d-b*c)^4/g*A*B/(d*x+c)^2*b^3*c^3-3/2*d^2/i^3/(a*d-b*c)^4/g*A*B/(d*x+c)^2*a
^2*b*c+3/2*d/i^3/(a*d-b*c)^4/g*A*B/(d*x+c)^2*a*b^2*c^2-3/2*d^2/i^3/(a*d-b*c
)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^2*b*c+15/4*d/i^3/(a*d
-b*c)^4/g*B^2*b^2*a-15/4/i^3/(a*d-b*c)^4/g*B^2*b^3*c+3/2*d/i^3/(a*d-b*c)^4/
g*A^2*b^2*a+1/2*d^3/i^3/(a*d-b*c)^4/g*A*B/(d*x+c)^2*a^3+d^2/i^3/(a*d-b*c)^4
/g*A^2*b/(d*x+c)*a^2-1/3*d/i^3/(a*d-b*c)^4/g*B^2*b^2*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)^3*a+7/2*d^2/i^3/(a*d-b*c)^4/g*B^2*b/(d*x+c)*a^2+1/2*d^3/i^3/(a*d-
b*c)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3-7/2*d/i^3/(a*d-b
*c)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a-1/2/i^3/(a*d-b*c)^4/g*B^2
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3+1/i^3/(a*d-b*c)^4/g*B^2*
ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3/(d*x+c)*c^2+1/2/i^3/(a*d-b*c)^4/g*B^2
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*b^3*c^3+3/2*d/i^3/(a*d-b*c)^4/
g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*a-1/2*d^3/i^3/(a*d-b*c)^4/g*B^2
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^3-d/i^3/(a*d-b*c)^4/g*A^2*b^
2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+1/i^3/(a*d-b*c)^4/g*A*B*b^3*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)^2*c-3/i^3/(a*d-b*c)^4/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)
/d*e)*b^3*c-3/i^3/(a*d-b*c)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*
x+c)*c^2+3*d^2/i^3/(a*d-b*c)^4/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c
)^2*a^2*b*c-3*d/i^3/(a*d-b*c)^4/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+
c)^2*a*b^2*c^2-4*d/i^3/(a*d-b*c)^4/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^
2/(d*x+c)*a*c+3/2*d/i^3/(a*d-b*c)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(
d*x+c)^2*a*b^2*c^2+1/i^3/(a*d-b*c)^4/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/
(d*x+c)^2*b^3*c^3+d^2/i^3/(a*d-b*c)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
^2*b/(d*x+c)*a^2+6*d/i^3/(a*d-b*c)^4/g*A*B*b^2/(d*x+c)*a*c-7/2*d/i^3/(a*d-b
*c)^4/g*A*B*b^2*a+7/2/i^3/(a*d-b*c)^4/g*A*B*b^3*c-3*d^2/i^3/(a*d-b*c)^4/g*A
*B*b/(d*x+c)*a^2+3/2*d^2/i^3/(a*d-b*c)^4/g*A^2/(d*x+c)^2*a^2*b*c-3*d^2/i^3/
(a*d-b*c)^4/g*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2-2*d/i^3/(a*
d-b*c)^4/g*A^2*b^2/(d*x+c)*a*c-7*d/i^3/(a*d-b*c)^4/g*B^2*b^2/(d*x+c)*a*c-3/
4*d/i^3/(a*d-b*c)^4/g*B^2/(d*x+c)^2*a*b^2*c^2+3/4*d^2/i^3/(a*d-b*c)^4/g*B^2
/(d*x+c)^2*a^2*b*c-3/2*d/i^3/(a*d-b*c)^4/g*A^2/(d*x+c)^2*b^2*c^2*a-d^3/i^3/
(a*d-b*c)^4/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+3*d/i^3/(a*
d-b*c)^4/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+6*d/i^3/(a*d-b*c)^4/g*
B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c-d/i^3/(a*d-b*c)^4/g*A*B
*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+3/2*d^2/i^3/(a*d-b*c)^4/g*B^2*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^2*b*c-3/2*d/i^3/(a*d-b*c)^4/g*B^2
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a*b^2*c^2+2*d^2/i^3/(a*d-b*c)^
```

```
4/g*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2+2/i^3/(a*d-b*c)^4/g*A
*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2
```

maxima [B] time = 3.06, size = 2116, normalized size = 5.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, algor
ithm="maxima")
```

```
[Out] 1/2*B^2*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*g*i
^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 - 2*a
*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2
*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3 - 3*a*b
^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x
+ c))^2 + A*B*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^
4)*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4
 - 2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a*b
^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3 -
 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))*log(b*e*x/(d*x + c) + a*e
/(d*x + c)) - 1/12*B^2*(6*(7*b^2*c^2 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2
 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b
^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c
*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 +
 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))*log(b*
e*x/(d*x + c) + a*e/(d*x + c))/(b^3*c^5*g*i^3 - 3*a*b^2*c^4*d*g*i^3 + 3*a^2
*b*c^3*d^2*g*i^3 - a^3*c^2*d^3*g*i^3 + (b^3*c^3*d^2*g*i^3 - 3*a*b^2*c^2*d^3
*g*i^3 + 3*a^2*b*c*d^4*g*i^3 - a^3*d^5*g*i^3)*x^2 + 2*(b^3*c^4*d*g*i^3 - 3*
a*b^2*c^3*d^2*g*i^3 + 3*a^2*b*c^2*d^3*g*i^3 - a^3*c*d^4*g*i^3)*x) - (45*b^2
*c^2 - 48*a*b*c*d + 3*a^2*d^2 + 4*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log
(b*x + a)^3 - 4*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^3 + 18*(
b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 6*(3*b^2*d^2*x^2 + 6*
b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a
))*log(d*x + c)^2 + 42*(b^2*c*d - a*b*d^2)*x + 42*(b^2*d^2*x^2 + 2*b^2*c*d*
x + b^2*c^2)*log(b*x + a) - 6*(7*b^2*d^2*x^2 + 14*b^2*c*d*x + 7*b^2*c^2 + 2
*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 6*(b^2*d^2*x^2 + 2*
b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))/(b^3*c^5*g*i^3 - 3*a*b^2*c
^4*d*g*i^3 + 3*a^2*b*c^3*d^2*g*i^3 - a^3*c^2*d^3*g*i^3 + (b^3*c^3*d^2*g*i^3
 - 3*a*b^2*c^2*d^3*g*i^3 + 3*a^2*b*c*d^4*g*i^3 - a^3*d^5*g*i^3)*x^2 + 2*(b^
3*c^4*d*g*i^3 - 3*a*b^2*c^3*d^2*g*i^3 + 3*a^2*b*c^2*d^3*g*i^3 - a^3*c*d^4*g
*i^3)*x)) + 1/2*A^2*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 +
a^2*d^4)*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b
^2*c^4 - 2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 -
 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3
*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3)) - 1/2*(7*b^2*c^2 -
8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^
2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a
*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2
*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2
)*log(b*x + a))*log(d*x + c))*A*B/(b^3*c^5*g*i^3 - 3*a*b^2*c^4*d*g*i^3 + 3*
a^2*b*c^3*d^2*g*i^3 - a^3*c^2*d^3*g*i^3 + (b^3*c^3*d^2*g*i^3 - 3*a*b^2*c^2*
d^3*g*i^3 + 3*a^2*b*c*d^4*g*i^3 - a^3*d^5*g*i^3)*x^2 + 2*(b^3*c^4*d*g*i^3 -
 3*a*b^2*c^3*d^2*g*i^3 + 3*a^2*b*c^2*d^3*g*i^3 - a^3*c*d^4*g*i^3)*x)
```

mupad [B] time = 8.10, size = 984, normalized size = 2.62

$$-\ln\left(\frac{e\,(a+b\,x)}{c+d\,x}\right)^2\left(\frac{\frac{B^2\,b^2\,\left(\frac{a^2\,d^2-3\,a\,b\,c\,d+2\,b^2\,c^2}{2\,b^3\,d}-\frac{c\,(a\,d-b\,c)}{2\,b^2\,d}\right)}{g\,i^3\,\left(a^3\,d^3-3\,a^2\,b\,c\,d^2+3\,a\,b^2\,c^2\,d-b^3\,c^3\right)}-\frac{B^2\,x\,(a\,d-b\,c)}{g\,i^3\,\left(a^3\,d^3-3\,a^2\,b\,c\,d^2+3\,a\,b^2\,c^2\,d-b^3\,c^3\right)}}{\frac{d\,x^2}{b}+\frac{c^2}{b\,d}+\frac{2\,c\,x}{b}}+\frac{B\,b^2\,(2\,A-3}{2\,g\,i^3\,\left(a^3\,d^3-3\,a^2\,b\,c\,d^2+3\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)*(c*i + d*i*x)^3),
x)
```

```
[Out] (b^2*atan((b^2*(A^2 + (7*B^2)/2 - 3*A*B)*(2*a^3*d^3*g*i^3 + 2*b^3*c^3*g*i^3
 - 2*a*b^2*c^2*d*g*i^3 - 2*a^2*b*c*d^2*g*i^3)*1i)/(g*i^3*(a*d - b*c)^3*(2*A
^2*b^2 + 7*B^2*b^2 - 6*A*B*b^2)) + (b^3*d*x*(a^2*d^2*g*i^3 + b^2*c^2*g*i^3
- 2*a*b*c*d*g*i^3)*(A^2 + (7*B^2)/2 - 3*A*B)*4i)/(g*i^3*(a*d - b*c)^3*(2*A^
2*b^2 + 7*B^2*b^2 - 6*A*B*b^2)))*(A^2 + (7*B^2)/2 - 3*A*B)*2i)/(g*i^3*(a*d
- b*c)^3) - ((2*A^2*a*d - 6*A^2*b*c + B^2*a*d - 15*B^2*b*c - 2*A*B*a*d + 14
*A*B*b*c)/(2*(a*d - b*c)) - (x*(2*A^2*b*d + 7*B^2*b*d - 6*A*B*b*d))/(a*d -
b*c))/(x^2*(2*a*d^3*g*i^3 - 2*b*c*d^2*g*i^3) + x*(4*a*c*d^2*g*i^3 - 4*b*c^2
*d*g*i^3) - 2*b*c^3*g*i^3 + 2*a*c^2*d*g*i^3) - (log((e*(a + b*x))/(c + d*x)
)*(B^2/(b*d*g*i^3*(a*d - b*c)) + (B*b^2*((a^2*d^2 + 2*b^2*c^2 - 3*a*b*c*d)/
(2*b^3*d) - (c*(a*d - b*c))/(2*b^2*d))*(2*A - 3*B))/(g*i^3*(a^3*d^3 - b^3*c
^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (B*x*(2*A - 3*B)*(a*d - b*c))/(g*i^3
*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))))/((d*x^2)/b + c^2/(b
*d) + (2*c*x)/b) - log((e*(a + b*x))/(c + d*x))^2*(((B^2*b^2*((a^2*d^2 + 2*
b^2*c^2 - 3*a*b*c*d)/(2*b^3*d) - (c*(a*d - b*c))/(2*b^2*d)))/(g*i^3*(a^3*d^
3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) - (B^2*x*(a*d - b*c))/(g*i^3*
(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)))/((d*x^2)/b + c^2/(b*d
) + (2*c*x)/b) + (B*b^2*(2*A - 3*B))/(2*g*i^3*(a^3*d^3 - b^3*c^3 + 3*a*b^2*
c^2*d - 3*a^2*b*c*d^2))) - (B^2*b^2*log((e*(a + b*x))/(c + d*x))^3)/(3*g*i^
3*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))
```

sympy [B] time = 14.45, size = 1488, normalized size = 3.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)/(d*i*x+c*i)**3,x)
```

```
[Out] -B**2*b**2*log(e*(a + b*x)/(c + d*x))**3/(3*a**3*d**3*g*i**3 - 9*a**2*b*c*d
**2*g*i**3 + 9*a*b**2*c**2*d*g*i**3 - 3*b**3*c**3*g*i**3) + b**2*(2*A**2 -
6*A*B + 7*B**2)*log(x + (2*A**2*a*b**2*d + 2*A**2*b**3*c - 6*A*B*a*b**2*d -
 6*A*B*b**3*c + 7*B**2*a*b**2*d + 7*B**2*b**3*c - a**4*b**2*d**4*(2*A**2 -
6*A*B + 7*B**2)/(a*d - b*c)**3 + 4*a**3*b**3*c*d**3*(2*A**2 - 6*A*B + 7*B**
2)/(a*d - b*c)**3 - 6*a**2*b**4*c**2*d**2*(2*A**2 - 6*A*B + 7*B**2)/(a*d -
b*c)**3 + 4*a*b**5*c**3*d*(2*A**2 - 6*A*B + 7*B**2)/(a*d - b*c)**3 - b**6*c
**4*(2*A**2 - 6*A*B + 7*B**2)/(a*d - b*c)**3)/(4*A**2*b**3*d - 12*A*B*b**3*
d + 14*B**2*b**3*d))/(2*g*i**3*(a*d - b*c)**3) - b**2*(2*A**2 - 6*A*B + 7*B
**2)*log(x + (2*A**2*a*b**2*d + 2*A**2*b**3*c - 6*A*B*a*b**2*d - 6*A*B*b**3
*c + 7*B**2*a*b**2*d + 7*B**2*b**3*c + a**4*b**2*d**4*(2*A**2 - 6*A*B + 7*B
**2)/(a*d - b*c)**3 - 4*a**3*b**3*c*d**3*(2*A**2 - 6*A*B + 7*B**2)/(a*d - b
*c)**3 + 6*a**2*b**4*c**2*d**2*(2*A**2 - 6*A*B + 7*B**2)/(a*d - b*c)**3 - 4
*a*b**5*c**3*d*(2*A**2 - 6*A*B + 7*B**2)/(a*d - b*c)**3 + b**6*c**4*(2*A**2
 - 6*A*B + 7*B**2)/(a*d - b*c)**3)/(4*A**2*b**3*d - 12*A*B*b**3*d + 14*B**2
*b**3*d))/(2*g*i**3*(a*d - b*c)**3) + (-2*A*B*a*d + 6*A*B*b*c + 4*A*B*b*d*x
 + B**2*a*d - 7*B**2*b*c - 6*B**2*b*d*x)*log(e*(a + b*x)/(c + d*x))/(2*a**2
*c**2*d**2*g*i**3 + 4*a**2*c*d**3*g*i**3*x + 2*a**2*d**4*g*i**3*x**2 - 4*a*
```

```
b*c**3*d*g*i**3 - 8*a*b*c**2*d**2*g*i**3*x - 4*a*b*c*d**3*g*i**3*x**2 + 2*b
**2*c**4*g*i**3 + 4*b**2*c**3*d*g*i**3*x + 2*b**2*c**2*d**2*g*i**3*x**2) +
(-2*A*B*b**2*c**2 - 4*A*B*b**2*c*d*x - 2*A*B*b**2*d**2*x**2 - B**2*a**2*d**
2 + 4*B**2*a*b*c*d + 2*B**2*a*b*d**2*x + 4*B**2*b**2*c*d*x + 3*B**2*b**2*d*
*2*x**2)*log(e*(a + b*x)/(c + d*x))**2/(2*a**3*c**2*d**3*g*i**3 + 4*a**3*c*
d**4*g*i**3*x + 2*a**3*d**5*g*i**3*x**2 - 6*a**2*b*c**3*d**2*g*i**3 - 12*a*
*2*b*c**2*d**3*g*i**3*x - 6*a**2*b*c*d**4*g*i**3*x**2 + 6*a*b**2*c**4*d*g*i
**3 + 12*a*b**2*c**3*d**2*g*i**3*x + 6*a*b**2*c**2*d**3*g*i**3*x**2 - 2*b**
3*c**5*g*i**3 - 4*b**3*c**4*d*g*i**3*x - 2*b**3*c**3*d**2*g*i**3*x**2) + (-
2*A**2*a*d + 6*A**2*b*c + 2*A*B*a*d - 14*A*B*b*c - B**2*a*d + 15*B**2*b*c +
 x*(4*A**2*b*d - 12*A*B*b*d + 14*B**2*b*d))/(4*a**2*c**2*d**2*g*i**3 - 8*a*
b*c**3*d*g*i**3 + 4*b**2*c**4*g*i**3 + x**2*(4*a**2*d**4*g*i**3 - 8*a*b*c*d
**3*g*i**3 + 4*b**2*c**2*d**2*g*i**3) + x*(8*a**2*c*d**3*g*i**3 - 16*a*b*c*
*2*d**2*g*i**3 + 8*b**2*c**3*d*g*i**3))
```

3.105 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^2(ci+dix)^3}\,dx$

Optimal. Leaf size=525

$$-\frac{b^3(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{g^2i^3(a+bx)(bc-ad)^4}-\frac{2b^3B(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{g^2i^3(a+bx)(bc-ad)^4}-\frac{b^2d\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^3}{Bg^2i^3(bc-ad)^4}-\frac{d^3(a+bx)^2\left(\cdots\right.}{2g^2i^3(c\cdots}$$

```
[Out] -1/4*B^2*d^3*(b*x+a)^2/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2-6*A*b*B*d^2*(b*x+a)/(
-a*d+b*c)^4/g^2/i^3/(d*x+c)+6*b*B^2*d^2*(b*x+a)/(-a*d+b*c)^4/g^2/i^3/(d*x+c
)-2*b^3*B^2*(d*x+c)/(-a*d+b*c)^4/g^2/i^3/(b*x+a)-6*b*B^2*d^2*(b*x+a)*ln(e*(
b*x+a)/(d*x+c))/(-a*d+b*c)^4/g^2/i^3/(d*x+c)+1/2*B*d^3*(b*x+a)^2*(A+B*ln(e*
(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2-2*b^3*B*(d*x+c)*(A+B*ln(e*
(b*x+a)/(d*x+c)))/(-a*d+b*c)^4/g^2/i^3/(b*x+a)-1/2*d^3*(b*x+a)^2*(A+B*ln(e*
(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2+3*b*d^2*(b*x+a)*(A+B*ln(
e*(b*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^2/i^3/(d*x+c)-b^3*(d*x+c)*(A+B*ln(e*(b
*x+a)/(d*x+c)))^2/(-a*d+b*c)^4/g^2/i^3/(b*x+a)-b^2*d*(A+B*ln(e*(b*x+a)/(d*x
+c)))^3/B/(-a*d+b*c)^4/g^2/i^3
```

Rubi [C] time = 8.42, antiderivative size = 2071, normalized size of antiderivative = 3.94, number of steps used = 143, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.738, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^2*(c*i + d*i*x)^3
),x]
```

```
[Out] (-2*b^2*B^2)/((b*c - a*d)^3*g^2*i^3*(a + b*x)) - (B^2*d)/(4*(b*c - a*d)^2*g
^2*i^3*(c + d*x)^2) - (11*b*B^2*d)/(2*(b*c - a*d)^3*g^2*i^3*(c + d*x)) - (1
5*b^2*B^2*d*Log[a + b*x])/(2*(b*c - a*d)^4*g^2*i^3) + (3*A*b^2*B*d*Log[a +
b*x]^2)/((b*c - a*d)^4*g^2*i^3) - (3*b^2*B^2*d*Log[a + b*x]^2)/(2*(b*c - a*
d)^4*g^2*i^3) - (3*b^2*B^2*d*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/((b*c - a*
d)^4*g^2*i^3) + (3*b^2*B^2*d*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x
)^(-1)]^2)/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*Log[-((b*c - a*d)/(d*(a +
 b*x)))]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B
^2*d*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^4*g^2*i^3) -
 (2*b^2*B*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d)^3*g^2*i^3*(a +
 b*x)) + (B*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*(b*c - a*d)^2*g^2*i^
3*(c + d*x)^2) + (5*b*B*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b*c - a*d
)^3*g^2*i^3*(c + d*x)) + (3*b^2*B*d*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(
c + d*x)]))/((b*c - a*d)^4*g^2*i^3) - (b^2*(A + B*Log[(e*(a + b*x))/(c + d*
x)])^2)/((b*c - a*d)^3*g^2*i^3*(a + b*x)) - (d*(A + B*Log[(e*(a + b*x))/(c
+ d*x)])^2)/(2*(b*c - a*d)^2*g^2*i^3*(c + d*x)^2) - (2*b*d*(A + B*Log[(e*(a
 + b*x))/(c + d*x)])^2)/((b*c - a*d)^3*g^2*i^3*(c + d*x)) - (3*b^2*d*Log[a
+ b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^4*g^2*i^3) + (1
5*b^2*B^2*d*Log[c + d*x])/(2*(b*c - a*d)^4*g^2*i^3) - (3*b^2*B^2*d*Log[a +
b*x]^2*Log[c + d*x])/((b*c - a*d)^4*g^2*i^3) - (6*A*b^2*B*d*Log[-((d*(a + b
*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*Log
[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^4*g^2*i^3) - (6*b
^2*B^2*d*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x])/((b*c - a*d)^4*g^2*
i^3) + (6*b^2*B^2*d*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[a + b*x] + Log[(
c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/((b*c - a*d)^4
*g^2*i^3) - (3*b^2*B*d*(A + B*Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*x])/(
```

```
(b*c - a*d)^4*g^2*i^3) + (3*b^2*d*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2*Lo
g[c + d*x])/((b*c - a*d)^4*g^2*i^3) + (3*A*b^2*B*d*Log[c + d*x]^2)/((b*c -
a*d)^4*g^2*i^3) - (3*b^2*B^2*d*Log[c + d*x]^2)/(2*(b*c - a*d)^4*g^2*i^3) -
(3*b^2*B^2*d*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^4*g^2*i^3) + (3*b^2*
B^2*d*Log[(e*(a + b*x))/(c + d*x)]*Log[c + d*x]^2)/((b*c - a*d)^4*g^2*i^3)
+ (b^2*B^2*d*Log[c + d*x]^3)/((b*c - a*d)^4*g^2*i^3) - (6*A*b^2*B*d*Log[a +
 b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*
d*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) + (3
*b^2*B^2*d*Log[a + b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^
2*i^3) - (6*A*b^2*B*d*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d
)^4*g^2*i^3) + (3*b^2*B^2*d*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c
 - a*d)^4*g^2*i^3) + (6*b^2*B^2*d*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(
b*c - a*d))])/((b*c - a*d)^4*g^2*i^3) - (6*A*b^2*B*d*PolyLog[2, (b*(c + d*x
))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*PolyLog[2, (b*(c +
d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) - (6*b^2*B^2*d*Log[(c + d*x)^(-
1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) + (6*b^2
*B^2*d*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*
PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) - (6*b^2*B^2
*d*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/
((b*c - a*d)^4*g^2*i^3) - (6*b^2*B^2*d*PolyLog[3, -((d*(a + b*x))/(b*c - a*
d))])/((b*c - a*d)^4*g^2*i^3) - (6*b^2*B^2*d*PolyLog[3, (b*(c + d*x))/(b*c
- a*d)])/((b*c - a*d)^4*g^2*i^3) - (6*b^2*B^2*d*PolyLog[3, 1 + (b*c - a*d)/
(d*(a + b*x))])/((b*c - a*d)^4*g^2*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
```

```
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(105c+105dx)^3(ag+bgx)^2}\,dx = \int\left(\frac{b^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc-ad)^3g^2(a+bx)^2} - \frac{b^3d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{385875(bc-ad)^4g^2(a+bx)} + \frac{d^2\left(A\right.}{1157625}\right.$$

$$= -\frac{\left(b^3d\right)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}dx}{385875(bc-ad)^4g^2} + \frac{\left(b^2d^2\right)\int\frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}dx}{385875(bc-ad)^4g^2} + \frac{b^3\int\frac{\left(A+B\log\right.}{(a+}}{1157625(b}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc-ad)^3g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2315250(bc-ad)^2g^2(c+dx)^2} - \frac{2bd\left(A\right.}{1157625(}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc-ad)^3g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2315250(bc-ad)^2g^2(c+dx)^2} - \frac{2bd\left(A\right.}{1157625(}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc-ad)^3g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2315250(bc-ad)^2g^2(c+dx)^2} - \frac{2bd\left(A\right.}{1157625(}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1157625(bc-ad)^3g^2(a+bx)} - \frac{d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2315250(bc-ad)^2g^2(c+dx)^2} - \frac{2bd\left(A\right.}{1157625(}$$

$$= -\frac{2b^2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1157625(bc-ad)^3g^2(a+bx)} + \frac{Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2315250(bc-ad)^2g^2(c+dx)^2} + \frac{bBd\left(A\right.}{231525(b}$$

$$= -\frac{2b^2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1157625(bc-ad)^3g^2(a+bx)} + \frac{Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2315250(bc-ad)^2g^2(c+dx)^2} + \frac{bBd\left(A\right.}{231525(b}$$

$$= \frac{b^2B^2d\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{385875(bc-ad)^4g^2} - \frac{2b^2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1157625(bc-ad)^3g^2(a+bx)} + \frac{Bd\left(A\right.}{2315250}$$

$$= -\frac{2b^2B^2}{1157625(bc-ad)^3g^2(a+bx)} - \frac{B^2d}{4630500(bc-ad)^2g^2(c+dx)^2} - \frac{}{2315250(}$$

$$= -\frac{2b^2B^2}{1157625(bc-ad)^3g^2(a+bx)} - \frac{B^2d}{4630500(bc-ad)^2g^2(c+dx)^2} - \frac{}{2315250(}$$

$$= -\frac{2b^2B^2}{1157625(bc-ad)^3g^2(a+bx)} - \frac{B^2d}{4630500(bc-ad)^2g^2(c+dx)^2} - \frac{}{2315250(}$$

$$= -\frac{2b^2B^2}{1157625(bc-ad)^3g^2(a+bx)} - \frac{B^2d}{4630500(bc-ad)^2g^2(c+dx)^2} - \frac{}{2315250(}$$

$$= -\frac{2b^2B^2}{1157625(bc-ad)^3g^2(a+bx)} - \frac{B^2d}{4630500(bc-ad)^2g^2(c+dx)^2} - \frac{}{2315250(}$$

$$= -\frac{2b^2B^2}{1157625(bc-ad)^3g^2(a+bx)} - \frac{B^2d}{4630500(bc-ad)^2g^2(c+dx)^2} - \frac{}{2315250(}$$

Mathematica [A] time = 1.55, size = 453, normalized size = 0.86

$$-\frac{2B\left(a^3Bd^3-3a^2bBd^2(2c+dx)+3ab^2d\left(2A(c+dx)^2-Bdx(4c+3dx)\right)+b^3\left(6Adx(c+dx)^2+B\left(2c^3+6c^2d\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^2*(c*i + d*
i*x)^3),x]
```

```
[Out] -1/4*((2*A^2 - 2*A*B + B^2)*d*(b*c - a*d)^2*(a + b*x) + 2*b*(4*A^2 - 10*A*B
 + 11*B^2)*d*(b*c - a*d)*(a + b*x)*(c + d*x) + 4*b^2*(A^2 + 2*A*B + 2*B^2)*
(b*c - a*d)*(c + d*x)^2 + 6*b^2*(2*A^2 - 2*A*B + 5*B^2)*d*(a + b*x)*(c + d*
x)^2*Log[a + b*x] + 2*B*(b*c - a*d)*((2*A - B)*d*(b*c - a*d)*(a + b*x) + 2*
b*(4*A - 5*B)*d*(a + b*x)*(c + d*x) + 4*b^2*(A + B)*(c + d*x)^2)*Log[(e*(a
+ b*x))/(c + d*x)] + 2*B*(a^3*B*d^3 - 3*a^2*b*B*d^2*(2*c + d*x) + 3*a*b^2*d
*(2*A*(c + d*x)^2 - B*d*x*(4*c + 3*d*x)) + b^3*(6*A*d*x*(c + d*x)^2 + B*(2*
c^3 + 6*c^2*d*x - 3*d^3*x^3)))*Log[(e*(a + b*x))/(c + d*x)]^2 + 4*b^2*B^2*d
*(a + b*x)*(c + d*x)^2*Log[(e*(a + b*x))/(c + d*x)]^3 - 6*b^2*(2*A^2 - 2*A*
B + 5*B^2)*d*(a + b*x)*(c + d*x)^2*Log[c + d*x])/((b*c - a*d)^4*g^2*i^3*(a
+ b*x)*(c + d*x)^2)
```

fricas [A] time = 0.93, size = 1008, normalized size = 1.92

$$-\frac{4\left(A^2+2\,AB+2\,B^2\right)b^3c^3+3\left(2\,A^2-10\,AB+5\,B^2\right)ab^2c^2d-12\left(A^2-2\,AB+2\,B^2\right)a^2bcd^2+\left(2\,A^2-2\,AB+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, alg
orithm="fricas")
```

```
[Out] -1/4*(4*(A^2 + 2*A*B + 2*B^2)*b^3*c^3 + 3*(2*A^2 - 10*A*B + 5*B^2)*a*b^2*c^
2*d - 12*(A^2 - 2*A*B + 2*B^2)*a^2*b*c*d^2 + (2*A^2 - 2*A*B + B^2)*a^3*d^3
+ 4*(B^2*b^3*d^3*x^3 + B^2*a*b^2*c^2*d + (2*B^2*b^3*c*d^2 + B^2*a*b^2*d^3)*
x^2 + (B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2)*x)*log((b*e*x + a*e)/(d*x + c))^3
 + 6*((2*A^2 - 2*A*B + 5*B^2)*b^3*c*d^2 - (2*A^2 - 2*A*B + 5*B^2)*a*b^2*d^3
)*x^2 + 2*(3*(2*A*B - B^2)*b^3*d^3*x^3 + 2*B^2*b^3*c^3 + 6*A*B*a*b^2*c^2*d
- 6*B^2*a^2*b*c*d^2 + B^2*a^3*d^3 + 3*(4*A*B*b^3*c*d^2 + (2*A*B - 3*B^2)*a*
b^2*d^3)*x^2 - 3*(B^2*a^2*b*d^3 - 2*(A*B + B^2)*b^3*c^2*d - 4*(A*B - B^2)*a
*b^2*c*d^2)*x)*log((b*e*x + a*e)/(d*x + c))^2 + 3*((6*A^2 - 2*A*B + 13*B^2)
*b^3*c^2*d - 2*(2*A^2 + 2*A*B + 3*B^2)*a*b^2*c*d^2 - (2*A^2 - 6*A*B + 7*B^2
)*a^2*b*d^3)*x + 2*(3*(2*A^2 - 2*A*B + 5*B^2)*b^3*d^3*x^3 + 6*A^2*a*b^2*c^2
*d + 4*(A*B + B^2)*b^3*c^3 - 12*(A*B - B^2)*a^2*b*c*d^2 + (2*A*B - B^2)*a^3
*d^3 + 3*(4*(A^2 + 2*B^2)*b^3*c*d^2 + (2*A^2 - 6*A*B + 7*B^2)*a*b^2*d^3)*x^
2 + 3*(2*(A^2 + 2*A*B + 2*B^2)*b^3*c^2*d + 4*(A^2 - 2*A*B + 2*B^2)*a*b^2*c*
d^2 - (2*A*B - 3*B^2)*a^2*b*d^3)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^5*c^4
*d^2 - 4*a*b^4*c^3*d^3 + 6*a^2*b^3*c^2*d^4 - 4*a^3*b^2*c*d^5 + a^4*b*d^6)*g
^2*i^3*x^3 + (2*b^5*c^5*d - 7*a*b^4*c^4*d^2 + 8*a^2*b^3*c^3*d^3 - 2*a^3*b^2
*c^2*d^4 - 2*a^4*b*c*d^5 + a^5*d^6)*g^2*i^3*x^2 + (b^5*c^6 - 2*a*b^4*c^5*d
- 2*a^2*b^3*c^4*d^2 + 8*a^3*b^2*c^3*d^3 - 7*a^4*b*c^2*d^4 + 2*a^5*c*d^5)*g^
2*i^3*x + (a*b^4*c^6 - 4*a^2*b^3*c^5*d + 6*a^3*b^2*c^4*d^2 - 4*a^4*b*c^3*d^
3 + a^5*c^2*d^4)*g^2*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 3802, normalized size = 7.24

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x)
```

```
[Out] -1/4*d^4/i^3/(a*d-b*c)^5/g^2*B^2/(d*x+c)^2*a^3-1/2*d^4/i^3/(a*d-b*c)^5/g^2*
A^2/(d*x+c)^2*a^3+2*e/i^3/(a*d-b*c)^5/g^2*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*
b*c/d*e+b/d*e)*c+3*d^3/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)/(d*x+c)^2*a^2*b*c-3*d^2/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)/(d*x+c)^2*a*b^2*c^2-8*d^2/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*
c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c-2*d*e/i^3/(a*d-b*c)^5/g^2*A*B*b^3/(1/(d*x+c
)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+3/2*d^3/i^
3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^2*b*c-3
/2*d^2/i^3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*
a*b^2*c^2-3/2*d^3/i^3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(
d*x+c)^2*a^2*b*c+4*d^3/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)*b/(d*x+c)*a^2+d/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
/(d*x+c)^2*b^3*c^3+4*d/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)*b^3/(d*x+c)*c^2-2*d*e/i^3/(a*d-b*c)^5/g^2*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x
+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a-d*e/i^3/(a*d-b*c)^5/g^
2*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)^2*a+2*e/i^3/(a*d-b*c)^5/g^2*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e
+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-23/4*d/i^3/(a*d-b*c)^5/g^2*B^2*b^
3*c+23/4*d^2/i^3/(a*d-b*c)^5/g^2*B^2*b^2*a+2*d^3/i^3/(a*d-b*c)^5/g^2*A^2*b/
(d*x+c)*a^2+3*d/i^3/(a*d-b*c)^5/g^2*A*B*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
^2*c+5*d^2/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a-5*
d/i^3/(a*d-b*c)^5/g^2*A*B*b^3/(d*x+c)*c^2+3/2*d^2/i^3/(a*d-b*c)^5/g^2*A*B/(
d*x+c)^2*a*b^2*c^2-3/2*d^3/i^3/(a*d-b*c)^5/g^2*A*B/(d*x+c)^2*a^2*b*c+10*d^2
/i^3/(a*d-b*c)^5/g^2*A*B*b^2/(d*x+c)*a*c-2*d*e/i^3/(a*d-b*c)^5/g^2*A*B*b^3/
(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+10*d^2/i^3/(a*d-b*c)^5/g^2*B^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c+3/2*d^2/i^3/(a*d-b*c)^5/g^2*B
^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a*b^2*c^2-4*d^2/i^3/(a*d-b*c)^
5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2/(d*x+c)*c*a-1/2*d/i^3/(a*d-
b*c)^5/g^2*A*B/(d*x+c)^2*b^3*c^3-5*d^3/i^3/(a*d-b*c)^5/g^2*A*B*b/(d*x+c)*a^
2+e/i^3/(a*d-b*c)^5/g^2*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c+2*e/i^3/(a*d-b*c)^5/g^2*B^2*b^4/(1/(d*x+c)
*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-3*d^2/i^3/(
a*d-b*c)^5/g^2*A^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+11/2*d^3/i^3/(a*d-
b*c)^5/g^2*B^2*b/(d*x+c)*a^2+11/2*d/i^3/(a*d-b*c)^5/g^2*B^2*b^3/(d*x+c)*c^2
+1/4*d/i^3/(a*d-b*c)^5/g^2*B^2/(d*x+c)^2*b^3*c^3+1/2*d^4/i^3/(a*d-b*c)^5/g^
2*A*B/(d*x+c)^2*a^3+11/2*d/i^3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)*b^3*c-5/2*d/i^3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)
^2*b^3*c+5/2*d^2/i^3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*
b^2*a-1/2*d^4/i^3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*
x+c)^2*a^3+1/2*d^4/i^3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/
(d*x+c)^2*a^3-11/2*d^2/i^3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d
*e)*b^2*a-d^2/i^3/(a*d-b*c)^5/g^2*B^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3
*a+e/i^3/(a*d-b*c)^5/g^2*A^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+
2*d/i^3/(a*d-b*c)^5/g^2*A^2*b^3/(d*x+c)*c^2+1/2*d/i^3/(a*d-b*c)^5/g^2*A^2/(
d*x+c)^2*b^3*c^3-5/2*d/i^3/(a*d-b*c)^5/g^2*A^2*b^3*c+5/2*d^2/i^3/(a*d-b*c)^
5/g^2*A^2*b^2*a+d/i^3/(a*d-b*c)^5/g^2*B^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*
e)^3*c+3*d/i^3/(a*d-b*c)^5/g^2*A^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+2*
e/i^3/(a*d-b*c)^5/g^2*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-3*d
```

```
^2/i^3/(a*d-b*c)^5/g^2*A*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-1/2*d/i^
3/(a*d-b*c)^5/g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-11/
2*d^2/i^3/(a*d-b*c)^5/g^2*A*B*b^2*a+11/2*d/i^3/(a*d-b*c)^5/g^2*A*B*b^3*c-d*
e/i^3/(a*d-b*c)^5/g^2*A^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-5*d
/i^3/(a*d-b*c)^5/g^2*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c-2*d*e/i^3/(a
*d-b*c)^5/g^2*B^2*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a-3/4*d^2/i^3
/(a*d-b*c)^5/g^2*B^2/(d*x+c)^2*a*b^2*c^2+2*d^3/i^3/(a*d-b*c)^5/g^2*B^2*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b/(d*x+c)*a^2-d^4/i^3/(a*d-b*c)^5/g^2*A*B*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+2*d/i^3/(a*d-b*c)^5/g^2*B^2*ln(b
/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3/(d*x+c)*c^2+1/2*d/i^3/(a*d-b*c)^5/g^2*B^2
*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*b^3*c^3-5*d^3/i^3/(a*d-b*c)^5/
g^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2-5*d/i^3/(a*d-b*c)^5/g
^2*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2-11*d^2/i^3/(a*d-b*c)
^5/g^2*B^2*b^2/(d*x+c)*a*c-3/2*d^2/i^3/(a*d-b*c)^5/g^2*A^2/(d*x+c)^2*a*b^2*
c^2+3/4*d^3/i^3/(a*d-b*c)^5/g^2*B^2/(d*x+c)^2*a^2*b*c-4*d^2/i^3/(a*d-b*c)^5
/g^2*A^2*b^2/(d*x+c)*a*c+3/2*d^3/i^3/(a*d-b*c)^5/g^2*A^2/(d*x+c)^2*a^2*b*c
```

maxima [B] time = 4.82, size = 4188, normalized size = 7.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, alg
orithm="maxima")
```

```
[Out] -1/2*B^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d +
 a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)
*g^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c
*d^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 +
5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3
*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4
*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^
2*d*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*
d^3 + a^4*d^4)*g^2*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 - A*B*((6*b
^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/(
(b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g^2*i^3*x^3 +
 (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5
)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^
3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2
 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d +
 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*d*log(d*x +
c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)
*g^2*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 1/4*B^2*(2*(4*b^3*c^3 - 1
5*a*b^2*c^2*d + 12*a^2*b*c*d^2 - a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 -
6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d +
 2*a*b^2*c*d^2)*x)*log(b*x + a)^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c
*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(d*x + c)^2 - 3*(
b^3*c^2*d + 2*a*b^2*c*d^2 - 3*a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a*b^2*c^2*d +
 (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a
) + 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2
*d + 2*a*b^2*c*d^2)*x + 2*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2
*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a))*log(d*x + c))*log(
b*e*x/(d*x + c) + a*e/(d*x + c))/(a*b^4*c^6*g^2*i^3 - 4*a^2*b^3*c^5*d*g^2*i
^3 + 6*a^3*b^2*c^4*d^2*g^2*i^3 - 4*a^4*b*c^3*d^3*g^2*i^3 + a^5*c^2*d^4*g^2*
i^3 + (b^5*c^4*d^2*g^2*i^3 - 4*a*b^4*c^3*d^3*g^2*i^3 + 6*a^2*b^3*c^2*d^4*g^
2*i^3 - 4*a^3*b^2*c*d^5*g^2*i^3 + a^4*b*d^6*g^2*i^3)*x^3 + (2*b^5*c^5*d*g^2
*i^3 - 7*a*b^4*c^4*d^2*g^2*i^3 + 8*a^2*b^3*c^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*
d^4*g^2*i^3 - 2*a^4*b*c*d^5*g^2*i^3 + a^5*d^6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i
^3 - 2*a*b^4*c^5*d*g^2*i^3 - 2*a^2*b^3*c^4*d^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*
g^2*i^3 - 7*a^4*b*c^2*d^4*g^2*i^3 + 2*a^5*c*d^5*g^2*i^3)*x) + (8*b^3*c^3 +
```

```
15*a*b^2*c^2*d - 24*a^2*b*c*d^2 + a^3*d^3 + 4*(b^3*d^3*x^3 + a*b^2*c^2*d +
(2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a)
^3 - 4*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^
2*d + 2*a*b^2*c*d^2)*x)*log(d*x + c)^3 + 30*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 6
*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d +
2*a*b^2*c*d^2)*x)*log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*
d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x + 2*(b^3*d^3*x^3 + a*b
^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*l
og(b*x + a))*log(d*x + c)^2 + 3*(13*b^3*c^2*d - 6*a*b^2*c*d^2 - 7*a^2*b*d^3
)*x + 30*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*
c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a) - 6*(5*b^3*d^3*x^3 + 5*a*b^2*c^2*d +
 5*(2*b^3*c*d^2 + a*b^2*d^3)*x^2 + 2*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*
d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a)^2 + 5*(b
^3*c^2*d + 2*a*b^2*c*d^2)*x + 2*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 +
 a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a))*log(d*x + c)
)/(a*b^4*c^6*g^2*i^3 - 4*a^2*b^3*c^5*d*g^2*i^3 + 6*a^3*b^2*c^4*d^2*g^2*i^3
- 4*a^4*b*c^3*d^3*g^2*i^3 + a^5*c^2*d^4*g^2*i^3 + (b^5*c^4*d^2*g^2*i^3 - 4*
a*b^4*c^3*d^3*g^2*i^3 + 6*a^2*b^3*c^2*d^4*g^2*i^3 - 4*a^3*b^2*c*d^5*g^2*i^3
 + a^4*b*d^6*g^2*i^3)*x^3 + (2*b^5*c^5*d*g^2*i^3 - 7*a*b^4*c^4*d^2*g^2*i^3
+ 8*a^2*b^3*c^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*d^4*g^2*i^3 - 2*a^4*b*c*d^5*g^2
*i^3 + a^5*d^6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i^3 - 2*a*b^4*c^5*d*g^2*i^3 - 2*
a^2*b^3*c^4*d^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*g^2*i^3 - 7*a^4*b*c^2*d^4*g^2*i
^3 + 2*a^5*c*d^5*g^2*i^3)*x)) - 1/2*A^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b
*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3
 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^
2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b
^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (
a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b
^2*d*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c
*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*d*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d +
 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3)) - 1/2*(4*b^3*c^3 -
15*a*b^2*c^2*d + 12*a^2*b*c*d^2 - a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 -
 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d
+ 2*a*b^2*c*d^2)*x)*log(b*x + a)^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*
c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(d*x + c)^2 - 3*
(b^3*c^2*d + 2*a*b^2*c*d^2 - 3*a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a*b^2*c^2*d
+ (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x +
a) + 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^
2*d + 2*a*b^2*c*d^2)*x + 2*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^
2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a))*log(d*x + c))*A*B
/(a*b^4*c^6*g^2*i^3 - 4*a^2*b^3*c^5*d*g^2*i^3 + 6*a^3*b^2*c^4*d^2*g^2*i^3 -
 4*a^4*b*c^3*d^3*g^2*i^3 + a^5*c^2*d^4*g^2*i^3 + (b^5*c^4*d^2*g^2*i^3 - 4*a
*b^4*c^3*d^3*g^2*i^3 + 6*a^2*b^3*c^2*d^4*g^2*i^3 - 4*a^3*b^2*c*d^5*g^2*i^3
+ a^4*b*d^6*g^2*i^3)*x^3 + (2*b^5*c^5*d*g^2*i^3 - 7*a*b^4*c^4*d^2*g^2*i^3 +
 8*a^2*b^3*c^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*d^4*g^2*i^3 - 2*a^4*b*c*d^5*g^2*
i^3 + a^5*d^6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i^3 - 2*a*b^4*c^5*d*g^2*i^3 - 2*a
^2*b^3*c^4*d^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*g^2*i^3 - 7*a^4*b*c^2*d^4*g^2*i^
3 + 2*a^5*c*d^5*g^2*i^3)*x)
```

mupad [B] time = 11.56, size = 1505, normalized size = 2.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^2*(c*i + d*i*x)^3
),x)
```

```
[Out] ((4*A^2*b^2*c^2 - 2*A^2*a^2*d^2 - B^2*a^2*d^2 + 8*B^2*b^2*c^2 + 2*A*B*a^2*d
^2 + 8*A*B*b^2*c^2 + 10*A^2*a*b*c*d + 23*B^2*a*b*c*d - 22*A*B*a*b*c*d)/(2*(
a*d - b*c)) + (3*x^2*(2*A^2*b^2*d^2 + 5*B^2*b^2*d^2 - 2*A*B*b^2*d^2))/(a*d
```

```
- b*c) + (3*x*(2*A^2*a*b*d^2 + 7*B^2*a*b*d^2 + 6*A^2*b^2*c*d + 13*B^2*b^2*c
*d - 6*A*B*a*b*d^2 - 2*A*B*b^2*c*d))/(2*(a*d - b*c)))/(x*(2*b^3*c^4*g^2*i^3
 + 4*a^3*c*d^3*g^2*i^3 - 6*a^2*b*c^2*d^2*g^2*i^3) + x^2*(2*a^3*d^4*g^2*i^3
+ 4*b^3*c^3*d*g^2*i^3 - 6*a*b^2*c^2*d^2*g^2*i^3) + x^3*(2*b^3*c^2*d^2*g^2*i
^3 + 2*a^2*b*d^4*g^2*i^3 - 4*a*b^2*c*d^3*g^2*i^3) + 2*a^3*c^2*d^2*g^2*i^3 +
 2*a*b^2*c^4*g^2*i^3 - 4*a^2*b*c^3*d*g^2*i^3) - log((e*(a + b*x))/(c + d*x)
)^2*((x*((3*B^2)/(2*g^2*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (3*B^2*(a*d
+ b*c))/(g^2*i^3*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) + (B^2*(a*d
+ 2*b*c))/(2*g^2*i^3*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) - (3*B^2*a*c)
/(g^2*i^3*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (3*B^2*b*d*x^2)/(g
^2*i^3*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(d*x^3 + (a*c^2)/(b*d)
 + (x^2*(a*d^2 + 2*b*c*d))/(b*d) + (x*(b*c^2 + 2*a*c*d))/(b*d)) + (3*B*b^2*
d*(2*A - B))/(2*g^2*i^3*(a*d - b*c)^2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - (
log((e*(a + b*x))/(c + d*x))*(x*((3*(B^2 + 2*A*B))/(2*g^2*i^3*(a^2*d^2 + b^
2*c^2 - 2*a*b*c*d)) - (3*B*(2*A - B)*(a*d + b*c))/(g^2*i^3*(a*d - b*c)*(a^2
*d^2 + b^2*c^2 - 2*a*b*c*d))) + (4*B^2*b*c - B^2*a*d + 2*A*B*a*d + 4*A*B*b*
c)/(2*g^2*i^3*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) - (3*B*a*c*(2*A - B)
)/(g^2*i^3*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (3*B*b*d*x^2*(2*A
 - B))/(g^2*i^3*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))))/(d*x^3 + (a*
c^2)/(b*d) + (x^2*(a*d^2 + 2*b*c*d))/(b*d) + (x*(b*c^2 + 2*a*c*d))/(b*d)) +
 (b^2*d*atan((b^2*d*(2*A^2 + 5*B^2 - 2*A*B)*(2*a^4*d^4*g^2*i^3 - 2*b^4*c^4*
g^2*i^3 + 4*a*b^3*c^3*d*g^2*i^3 - 4*a^3*b*c*d^3*g^2*i^3)*3i)/(2*g^2*i^3*(a*
d - b*c)^4*(6*A^2*b^2*d + 15*B^2*b^2*d - 6*A*B*b^2*d)) + (b^3*d^2*x*(2*A^2
+ 5*B^2 - 2*A*B)*(a^3*d^3*g^2*i^3 - b^3*c^3*g^2*i^3 + 3*a*b^2*c^2*d*g^2*i^3
 - 3*a^2*b*c*d^2*g^2*i^3)*6i)/(g^2*i^3*(a*d - b*c)^4*(6*A^2*b^2*d + 15*B^2*
b^2*d - 6*A*B*b^2*d)))*(2*A^2 + 5*B^2 - 2*A*B)*3i)/(g^2*i^3*(a*d - b*c)^4)
- (B^2*b^2*d*log((e*(a + b*x))/(c + d*x))^3)/(g^2*i^3*(a*d - b*c)^2*(a^2*d^
2 + b^2*c^2 - 2*a*b*c*d))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**2/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

3.106 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^3(ci+dix)^3}\,dx$

Optimal. Leaf size=685

$$-\frac{b^4(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{2g^3i^3(a+bx)^2(bc-ad)^5}-\frac{b^4B(c+dx)^2\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)}{2g^3i^3(a+bx)^2(bc-ad)^5}+\frac{4b^3d(c+dx)\left(B\log\left(\frac{e(a+bx)}{c+dx}\right)+A\right)^2}{g^3i^3(a+bx)(bc-ad)^5}+\frac{8b}{}$$

```
[Out] 1/4*B^2*d^4*(b*x+a)^2/(-a*d+b*c)^5/g^3/i^3/(d*x+c)^2+8*A*b*B*d^3*(b*x+a)/(-
a*d+b*c)^5/g^3/i^3/(d*x+c)-8*b*B^2*d^3*(b*x+a)/(-a*d+b*c)^5/g^3/i^3/(d*x+c)
+8*b^3*B^2*d*(d*x+c)/(-a*d+b*c)^5/g^3/i^3/(b*x+a)-1/4*b^4*B^2*(d*x+c)^2/(-a
*d+b*c)^5/g^3/i^3/(b*x+a)^2+8*b*B^2*d^3*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/(-a*d
+b*c)^5/g^3/i^3/(d*x+c)-1/2*B*d^4*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a
*d+b*c)^5/g^3/i^3/(d*x+c)^2+8*b^3*B*d*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(
-a*d+b*c)^5/g^3/i^3/(b*x+a)-1/2*b^4*B*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))
/(-a*d+b*c)^5/g^3/i^3/(b*x+a)^2+1/2*d^4*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)
))^2/(-a*d+b*c)^5/g^3/i^3/(d*x+c)^2-4*b*d^3*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+
c)))^2/(-a*d+b*c)^5/g^3/i^3/(d*x+c)+4*b^3*d*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+
c)))^2/(-a*d+b*c)^5/g^3/i^3/(b*x+a)-1/2*b^4*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*
x+c)))^2/(-a*d+b*c)^5/g^3/i^3/(b*x+a)^2+2*b^2*d^2*(A+B*ln(e*(b*x+a)/(d*x+c)
))^3/B/(-a*d+b*c)^5/g^3/i^3
```

Rubi [C] time = 9.58, antiderivative size = 1921, normalized size of antiderivative = 2.80, number of steps used = 173, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.738, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^3*(c*i + d*i*x)^3
),x]
```

```
[Out] -(b^2*B^2)/(4*(b*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (15*b^2*B^2*d)/(2*(b*c -
 a*d)^4*g^3*i^3*(a + b*x)) + (B^2*d^2)/(4*(b*c - a*d)^3*g^3*i^3*(c + d*x)^2
) + (15*b*B^2*d^2)/(2*(b*c - a*d)^4*g^3*i^3*(c + d*x)) + (15*b^2*B^2*d^2*Lo
g[a + b*x])/((b*c - a*d)^5*g^3*i^3) - (6*A*b^2*B*d^2*Log[a + b*x]^2)/((b*c
- a*d)^5*g^3*i^3) + (6*b^2*B^2*d^2*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/((b*
c - a*d)^5*g^3*i^3) - (6*b^2*B^2*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[
(c + d*x)^(-1)]^2)/((b*c - a*d)^5*g^3*i^3) - (6*b^2*B^2*d^2*Log[-((b*c - a*
d)/(d*(a + b*x)))]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^5*g^3*i^3)
- (6*b^2*B^2*d^2*Log[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^
5*g^3*i^3) - (b^2*B*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(2*(b*c - a*d)^3*
g^3*i^3*(a + b*x)^2) + (7*b^2*B*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/((b
*c - a*d)^4*g^3*i^3*(a + b*x)) - (B*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]
))/(2*(b*c - a*d)^3*g^3*i^3*(c + d*x)^2) - (7*b*B*d^2*(A + B*Log[(e*(a + b*
x))/(c + d*x)]))/((b*c - a*d)^4*g^3*i^3*(c + d*x)) - (b^2*(A + B*Log[(e*(a
+ b*x))/(c + d*x)])^2)/(2*(b*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (3*b^2*d*(A
+ B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^4*g^3*i^3*(a + b*x)) + (d
^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*(b*c - a*d)^3*g^3*i^3*(c + d*
x)^2) + (3*b*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^4*g^3
*i^3*(c + d*x)) + (6*b^2*d^2*Log[a + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x
)])^2)/((b*c - a*d)^5*g^3*i^3) - (15*b^2*B^2*d^2*Log[c + d*x])/((b*c - a*d)
^5*g^3*i^3) + (6*b^2*B^2*d^2*Log[a + b*x]^2*Log[c + d*x])/((b*c - a*d)^5*g^
3*i^3) + (12*A*b^2*B*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((
b*c - a*d)^5*g^3*i^3) + (12*b^2*B^2*d^2*Log[a + b*x]*Log[(c + d*x)^(-1)]*Lo
```

```
g[c + d*x])/((b*c - a*d)^5*g^3*i^3) - (12*b^2*B^2*d^2*Log[-((d*(a + b*x))/(
b*c - a*d))]*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d
*x)])*Log[c + d*x])/((b*c - a*d)^5*g^3*i^3) - (6*b^2*d^2*(A + B*Log[(e*(a +
 b*x))/(c + d*x)])^2*Log[c + d*x])/((b*c - a*d)^5*g^3*i^3) - (6*A*b^2*B*d^2
*Log[c + d*x]^2)/((b*c - a*d)^5*g^3*i^3) + (6*b^2*B^2*d^2*Log[a + b*x]*Log[
c + d*x]^2)/((b*c - a*d)^5*g^3*i^3) - (6*b^2*B^2*d^2*Log[(e*(a + b*x))/(c +
 d*x)]*Log[c + d*x]^2)/((b*c - a*d)^5*g^3*i^3) - (2*b^2*B^2*d^2*Log[c + d*x
]^3)/((b*c - a*d)^5*g^3*i^3) + (12*A*b^2*B*d^2*Log[a + b*x]*Log[(b*(c + d*x
))/(b*c - a*d)])/((b*c - a*d)^5*g^3*i^3) - (6*b^2*B^2*d^2*Log[a + b*x]^2*Lo
g[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^3*i^3) + (12*A*b^2*B*d^2*Pol
yLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^5*g^3*i^3) - (12*b^2*B^
2*d^2*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^5
*g^3*i^3) + (12*A*b^2*B*d^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c -
a*d)^5*g^3*i^3) + (12*b^2*B^2*d^2*Log[(c + d*x)^(-1)]*PolyLog[2, (b*(c + d*
x))/(b*c - a*d)])/((b*c - a*d)^5*g^3*i^3) - (12*b^2*B^2*d^2*(Log[a + b*x] +
 Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*PolyLog[2, (b*(c + d*x
))/(b*c - a*d)])/((b*c - a*d)^5*g^3*i^3) + (12*b^2*B^2*d^2*Log[(e*(a + b*x)
)/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^5*g^3*
i^3) + (12*b^2*B^2*d^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*
d)^5*g^3*i^3) + (12*b^2*B^2*d^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*
c - a*d)^5*g^3*i^3) + (12*b^2*B^2*d^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*
x))])/((b*c - a*d)^5*g^3*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
```

```
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(106c+106dx)^3(ag+bgx)^3}\,dx = \int \left(\frac{b^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1191016(bc-ad)^3g^3(a+bx)^3} - \frac{3b^3d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1191016(bc-ad)^4g^3(a+bx)^2} + \frac{3b^3d^2\,\cdots}{59550\cdots}\right.$$

$$= \frac{\left(3b^3d^2\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{a+bx}\,dx}{595508(bc-ad)^5g^3} - \frac{\left(3b^2d^3\right)\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{c+dx}\,dx}{595508(bc-ad)^5g^3} - \frac{\left(3b^3d\right)\int \cdots}{119101\cdots}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2382032(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1191016(bc-ad)^4g^3(a+bx)} + \frac{d^2\left(A\cdots\right.}{2382032(\cdots}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2382032(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1191016(bc-ad)^4g^3(a+bx)} + \frac{d^2\left(A\cdots\right.}{2382032(\cdots}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2382032(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1191016(bc-ad)^4g^3(a+bx)} + \frac{d^2\left(A\cdots\right.}{2382032(\cdots}$$

$$= -\frac{b^2\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{2382032(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{1191016(bc-ad)^4g^3(a+bx)} + \frac{d^2\left(A\cdots\right.}{2382032(\cdots}$$

$$= -\frac{b^2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2382032(bc-ad)^3g^3(a+bx)^2} + \frac{7b^2Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1191016(bc-ad)^4g^3(a+bx)} - \frac{Bd^2\left(A\cdots\right.}{2382032(\cdots}$$

$$= -\frac{b^2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2382032(bc-ad)^3g^3(a+bx)^2} + \frac{7b^2Bd\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{1191016(bc-ad)^4g^3(a+bx)} - \frac{Bd^2\left(A\cdots\right.}{2382032(\cdots}$$

$$= -\frac{3b^2B^2d^2\log(a+bx)\log^2\left(\frac{e(a+bx)}{c+dx}\right)}{595508(bc-ad)^5g^3} - \frac{b^2B\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)}{2382032(bc-ad)^3g^3(a+bx)^2} + \frac{7b^2\cdots}{119\cdots}$$

$$= -\frac{b^2B^2}{4764064(bc-ad)^3g^3(a+bx)^2} + \frac{15b^2B^2d}{2382032(bc-ad)^4g^3(a+bx)} + \frac{\cdots}{4764064\cdots}$$

$$= -\frac{b^2B^2}{4764064(bc-ad)^3g^3(a+bx)^2} + \frac{15b^2B^2d}{2382032(bc-ad)^4g^3(a+bx)} + \frac{\cdots}{4764064\cdots}$$

$$= -\frac{b^2B^2}{4764064(bc-ad)^3g^3(a+bx)^2} + \frac{15b^2B^2d}{2382032(bc-ad)^4g^3(a+bx)} + \frac{\cdots}{4764064\cdots}$$

$$= -\frac{b^2B^2}{4764064(bc-ad)^3g^3(a+bx)^2} + \frac{15b^2B^2d}{2382032(bc-ad)^4g^3(a+bx)} + \frac{\cdots}{4764064\cdots}$$

$$= -\frac{b^2B^2}{4764064(bc-ad)^3g^3(a+bx)^2} + \frac{15b^2B^2d}{2382032(bc-ad)^4g^3(a+bx)} + \frac{\cdots}{4764064\cdots}$$

$$= -\frac{b^2B^2}{4764064(bc-ad)^3g^3(a+bx)^2} + \frac{15b^2B^2d}{2382032(bc-ad)^4g^3(a+bx)} + \frac{\cdots}{4764064\cdots}$$

Mathematica [A] time = 2.20, size = 611, normalized size = 0.89

$$\frac{-2B\left(-a^4Bd^4+4a^3bBd^3(2c+dx)-6a^2b^2d^2\left(2A(c+dx)^2-Bdx(4c+3dx)\right)-4ab^3d\left(6Adx(c+dx)^2+B\left(2c^3\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^3*(c*i + d*
i*x)^3),x]
```

```
[Out] ((2*A^2 - 2*A*B + B^2)*d^2*(b*c - a*d)^2*(a + b*x)^2 + 2*b*(6*A^2 - 14*A*B
+ 15*B^2)*d^2*(b*c - a*d)*(a + b*x)^2*(c + d*x) - b^2*(2*A^2 + 2*A*B + B^2)
*(b*c - a*d)^2*(c + d*x)^2 + 2*b^2*(6*A^2 + 14*A*B + 15*B^2)*d*(b*c - a*d)*
(a + b*x)*(c + d*x)^2 + 12*b^2*(2*A^2 + 5*B^2)*d^2*(a + b*x)^2*(c + d*x)^2*
Log[a + b*x] + 2*B*(b*c - a*d)*((2*A - B)*d^2*(b*c - a*d)*(a + b*x)^2 + 2*b
*(6*A - 7*B)*d^2*(a + b*x)^2*(c + d*x) - b^2*(2*A + B)*(b*c - a*d)*(c + d*x
)^2 + 2*b^2*(6*A + 7*B)*d*(a + b*x)*(c + d*x)^2)*Log[(e*(a + b*x))/(c + d*x
)] - 2*B*(-(a^4*B*d^4) + 4*a^3*b*B*d^3*(2*c + d*x) - 6*a^2*b^2*d^2*(2*A*(c
+ d*x)^2 - B*d*x*(4*c + 3*d*x)) + b^4*(-12*A*d^2*x^2*(c + d*x)^2 + B*c*(c^3
 - 4*c^2*d*x - 18*c*d^2*x^2 - 12*d^3*x^3)) - 4*a*b^3*d*(6*A*d*x*(c + d*x)^2
 + B*(2*c^3 + 6*c^2*d*x - 3*d^3*x^3)))*Log[(e*(a + b*x))/(c + d*x)]^2 + 8*b
^2*B^2*d^2*(a + b*x)^2*(c + d*x)^2*Log[(e*(a + b*x))/(c + d*x)]^3 - 12*b^2*
(2*A^2 + 5*B^2)*d^2*(a + b*x)^2*(c + d*x)^2*Log[c + d*x])/(4*(b*c - a*d)^5*
g^3*i^3*(a + b*x)^2*(c + d*x)^2)
```

fricas [B] time = 0.96, size = 1517, normalized size = 2.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, alg
orithm="fricas")
```

```
[Out] -1/4*(60*A*B*a^2*b^2*c^2*d^2 + (2*A^2 + 2*A*B + B^2)*b^4*c^4 - 16*(A^2 + 2*
A*B + 2*B^2)*a*b^3*c^3*d + 16*(A^2 - 2*A*B + 2*B^2)*a^3*b*c*d^3 - (2*A^2 -
2*A*B + B^2)*a^4*d^4 - 12*((2*A^2 + 5*B^2)*b^4*c*d^3 - (2*A^2 + 5*B^2)*a*b^
3*d^4)*x^3 - 8*(B^2*b^4*d^4*x^4 + B^2*a^2*b^2*c^2*d^2 + 2*(B^2*b^4*c*d^3 +
B^2*a*b^3*d^4)*x^3 + (B^2*b^4*c^2*d^2 + 4*B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4
)*x^2 + 2*(B^2*a*b^3*c^2*d^2 + B^2*a^2*b^2*c*d^3)*x)*log((b*e*x + a*e)/(d*x
 + c))^3 + 6*(8*A*B*a*b^3*c*d^3 - (6*A^2 + 4*A*B + 15*B^2)*b^4*c^2*d^2 + (6
*A^2 - 4*A*B + 15*B^2)*a^2*b^2*d^4)*x^2 - 2*(12*A*B*b^4*d^4*x^4 - B^2*b^4*c
^4 + 8*B^2*a*b^3*c^3*d + 12*A*B*a^2*b^2*c^2*d^2 - 8*B^2*a^3*b*c*d^3 + B^2*a
^4*d^4 + 12*((2*A*B + B^2)*b^4*c*d^3 + (2*A*B - B^2)*a*b^3*d^4)*x^3 + 6*(8*
A*B*a*b^3*c*d^3 + (2*A*B + 3*B^2)*b^4*c^2*d^2 + (2*A*B - 3*B^2)*a^2*b^2*d^4
)*x^2 + 4*(B^2*b^4*c^3*d - B^2*a^3*b*d^4 + 6*(A*B + B^2)*a*b^3*c^2*d^2 + 6*
(A*B - B^2)*a^2*b^2*c*d^3)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 4*((2*A^2 +
6*A*B + 7*B^2)*b^4*c^3*d + 6*(2*A^2 - A*B + 4*B^2)*a*b^3*c^2*d^2 - 6*(2*A^2
 + A*B + 4*B^2)*a^2*b^2*c*d^3 - (2*A^2 - 6*A*B + 7*B^2)*a^3*b*d^4)*x - 2*(6
*(2*A^2 + 5*B^2)*b^4*d^4*x^4 + 12*A^2*a^2*b^2*c^2*d^2 - (2*A*B + B^2)*b^4*c
^4 + 16*(A*B + B^2)*a*b^3*c^3*d - 16*(A*B - B^2)*a^3*b*c*d^3 + (2*A*B - B^2
)*a^4*d^4 + 12*((2*A^2 + 2*A*B + 5*B^2)*b^4*c*d^3 + (2*A^2 - 2*A*B + 5*B^2)
*a*b^3*d^4)*x^3 + 6*((2*A^2 + 6*A*B + 7*B^2)*b^4*c^2*d^2 + 8*(A^2 + 2*B^2)*
a*b^3*c*d^3 + (2*A^2 - 6*A*B + 7*B^2)*a^2*b^2*d^4)*x^2 + 4*((2*A*B + 3*B^2)
*b^4*c^3*d + 6*(A^2 + 2*A*B + 2*B^2)*a*b^3*c^2*d^2 + 6*(A^2 - 2*A*B + 2*B^2
)*a^2*b^2*c*d^3 - (2*A*B - 3*B^2)*a^3*b*d^4)*x)*log((b*e*x + a*e)/(d*x + c)
))/((b^7*c^5*d^2 - 5*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 - 10*a^3*b^4*c^2*d^
5 + 5*a^4*b^3*c*d^6 - a^5*b^2*d^7)*g^3*i^3*x^4 + 2*(b^7*c^6*d - 4*a*b^6*c^5
*d^2 + 5*a^2*b^5*c^4*d^3 - 5*a^4*b^3*c^2*d^5 + 4*a^5*b^2*c*d^6 - a^6*b*d^7)
*g^3*i^3*x^3 + (b^7*c^7 - a*b^6*c^6*d - 9*a^2*b^5*c^5*d^2 + 25*a^3*b^4*c^4*
```

```
d^3 - 25*a^4*b^3*c^3*d^4 + 9*a^5*b^2*c^2*d^5 + a^6*b*c*d^6 - a^7*d^7)*g^3*i
^3*x^2 + 2*(a*b^6*c^7 - 4*a^2*b^5*c^6*d + 5*a^3*b^4*c^5*d^2 - 5*a^5*b^2*c^3
*d^4 + 4*a^6*b*c^2*d^5 - a^7*c*d^6)*g^3*i^3*x + (a^2*b^5*c^7 - 5*a^3*b^4*c^
6*d + 10*a^4*b^3*c^5*d^2 - 10*a^5*b^2*c^4*d^3 + 5*a^6*b*c^3*d^4 - a^7*c^2*d
^5)*g^3*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 4782, normalized size = 6.98

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)
```

```
[Out] -3/2*d^4/i^3/(a*d-b*c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*
a^2*b*c+3/2*d^3/i^3/(a*d-b*c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*
x+c)^2*a*b^2*c^2+1/2*d*e^2/i^3/(a*d-b*c)^6/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*
x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+1/2*d*e^2/i^3/(a*
d-b*c)^6/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*
d-b*c)/(d*x+c)/d*e)*a-4*d^2*e/i^3/(a*d-b*c)^6/g^3*B^2*b^3/(1/(d*x+c)*a*e-1/
(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a+4*d*e/i^3/(a*d-b
*c)^6/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c
)/(d*x+c)/d*e)^2*c-8*d^2*e/i^3/(a*d-b*c)^6/g^3*B^2*b^3/(1/(d*x+c)*a*e-1/(d*
x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+8*d*e/i^3/(a*d-b*c)^6
/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*
x+c)/d*e)*c-3/2*d^4/i^3/(a*d-b*c)^6/g^3*A*B/(d*x+c)^2*a^2*b*c+3*d^4/i^3/(a*
d-b*c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b/(d*x+c)*a^2-1/2*d^5/i^
3/(a*d-b*c)^6/g^3*A^2/(d*x+c)^2*a^3-1/4*d^5/i^3/(a*d-b*c)^6/g^3*B^2/(d*x+c)
^2*a^3-3*d^3/i^3/(a*d-b*c)^6/g^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c
)^2*a*b^2*c^2-12*d^3/i^3/(a*d-b*c)^6/g^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)*b^2/(d*x+c)*a*c-8*d^2*e/i^3/(a*d-b*c)^6/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x
+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+8*d*e/i^3/(a*d-b*c)^6/
g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*ln(b/d*e+(a*d-b*c)/(d*x
+c)/d*e)*c+3*d^4/i^3/(a*d-b*c)^6/g^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d
*x+c)^2*a^2*b*c+d*e^2/i^3/(a*d-b*c)^6/g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*
b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+15/2*d^2/i^3/(a*d-b*c)^6
/g^3*B^2*b^3/(d*x+c)*c^2-7/2*d^2/i^3/(a*d-b*c)^6/g^3*A^2*b^3*c+7/2*d^3/i^3/
(a*d-b*c)^6/g^3*A^2*b^2*a+31/4*d^3/i^3/(a*d-b*c)^6/g^3*B^2*b^2*a-31/4*d^2/i
^3/(a*d-b*c)^6/g^3*B^2*b^3*c+15/2*d^4/i^3/(a*d-b*c)^6/g^3*B^2*b/(d*x+c)*a^2
-6*d^3/i^3/(a*d-b*c)^6/g^3*A^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*a+6*d^2/
i^3/(a*d-b*c)^6/g^3*A^2*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c+7/2*d^3/i^3/(
a*d-b*c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^2*a-15/2*d^3/i^3/(a*
d-b*c)^6/g^3*A*B*b^2*a+15/2*d^2/i^3/(a*d-b*c)^6/g^3*A*B*b^3*c-7/2*d^2/i^3/(
a*d-b*c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3*c-15/2*d^3/i^3/(a*
d-b*c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a+15/2*d^2/i^3/(a*d-b*
c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c-2*d^3/i^3/(a*d-b*c)^6/g^
3*B^2*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*a+2*d^2/i^3/(a*d-b*c)^6/g^3*B^2
*b^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^3*c-1/2*d^5/i^3/(a*d-b*c)^6/g^3*B^2*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a^3+1/2*d^5/i^3/(a*d-b*c)^6/g^3*B
^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+3*d^2/i^3/(a*d-b*c)^6/g^3*
```

```
A^2*b^3/(d*x+c)*c^2+1/2*d^2/i^3/(a*d-b*c)^6/g^3*A^2/(d*x+c)^2*b^3*c^3-1/4*e
^2/i^3/(a*d-b*c)^6/g^3*B^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*c-
1/2*e^2/i^3/(a*d-b*c)^6/g^3*A^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)
^2*c+3/2*d^4/i^3/(a*d-b*c)^6/g^3*A^2/(d*x+c)^2*a^2*b*c+3/2*d^3/i^3/(a*d-b*c
)^6/g^3*A*B/(d*x+c)^2*a*b^2*c^2+14*d^3/i^3/(a*d-b*c)^6/g^3*A*B*b^2/(d*x+c)*
a*c+1/2*d*e^2/i^3/(a*d-b*c)^6/g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+
b/d*e)^2*a+8*d*e/i^3/(a*d-b*c)^6/g^3*A*B*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d
*e+b/d*e)*c-8*d^2*e/i^3/(a*d-b*c)^6/g^3*A*B*b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*
c/d*e+b/d*e)*a-6*d^3/i^3/(a*d-b*c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e
)^2*b^2/(d*x+c)*c*a+6*d^4/i^3/(a*d-b*c)^6/g^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*b/(d*x+c)*a^2+6*d^2/i^3/(a*d-b*c)^6/g^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+
c)/d*e)*b^3/(d*x+c)*c^2+3/2*d^4/i^3/(a*d-b*c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/
(d*x+c)/d*e)^2/(d*x+c)^2*a^2*b*c+14*d^3/i^3/(a*d-b*c)^6/g^3*B^2*ln(b/d*e+(a
*d-b*c)/(d*x+c)/d*e)*b^2/(d*x+c)*a*c+d^2/i^3/(a*d-b*c)^6/g^3*A*B*ln(b/d*e+(
a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b^3*c^3-3/2*d^3/i^3/(a*d-b*c)^6/g^3*B^2*ln(
b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*a*b^2*c^2-e^2/i^3/(a*d-b*c)^6/g^3*
A*B*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c
)/d*e)*c+3*d^4/i^3/(a*d-b*c)^6/g^3*A^2*b/(d*x+c)*a^2+1/2*d^5/i^3/(a*d-b*c)^
6/g^3*A*B/(d*x+c)^2*a^3+1/4*d^2/i^3/(a*d-b*c)^6/g^3*B^2/(d*x+c)^2*b^3*c^3+1
/4*d*e^2/i^3/(a*d-b*c)^6/g^3*B^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e
)^2*a+1/2*d*e^2/i^3/(a*d-b*c)^6/g^3*A^2*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*
e+b/d*e)^2*a-1/2*e^2/i^3/(a*d-b*c)^6/g^3*B^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b
*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*c-6*d^3/i^3/(a*d-b*c)^6/g^3
*A*B*b^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*a-d^5/i^3/(a*d-b*c)^6/g^3*A*B*ln
(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*a^3+3*d^2/i^3/(a*d-b*c)^6/g^3*B^2*l
n(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*b^3/(d*x+c)*c^2+1/2*d^2/i^3/(a*d-b*c)^6/g^
3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2/(d*x+c)^2*b^3*c^3+7*d^3/i^3/(a*d-b*
c)^6/g^3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^2*a-7*d^2/i^3/(a*d-b*c)^6/g^
3*A*B*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3*c+6*d^2/i^3/(a*d-b*c)^6/g^3*A*B*b
^3*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)^2*c-8*d^2*e/i^3/(a*d-b*c)^6/g^3*B^2*b^3/
(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+8*d*e/i^3/(a*d-b*c)^6/g^3*B^2*b^4
/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c-4*d^2*e/i^3/(a*d-b*c)^6/g^3*A^2*
b^3/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*a+4*d*e/i^3/(a*d-b*c)^6/g^3*A^2
*b^4/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)*c+3/4*d^4/i^3/(a*d-b*c)^6/g^3*
B^2/(d*x+c)^2*a^2*b*c-3/4*d^3/i^3/(a*d-b*c)^6/g^3*B^2/(d*x+c)^2*a*b^2*c^2-6
*d^3/i^3/(a*d-b*c)^6/g^3*A^2*b^2/(d*x+c)*a*c-7*d^2/i^3/(a*d-b*c)^6/g^3*A*B*
b^3/(d*x+c)*c^2-1/2*e^2/i^3/(a*d-b*c)^6/g^3*A*B*b^5/(1/(d*x+c)*a*e-1/(d*x+c
)*b*c/d*e+b/d*e)^2*c-1/2*d^2/i^3/(a*d-b*c)^6/g^3*A*B/(d*x+c)^2*b^3*c^3-7*d^
4/i^3/(a*d-b*c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b/(d*x+c)*a^2-7*d
^2/i^3/(a*d-b*c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)*b^3/(d*x+c)*c^2-
1/2*d^2/i^3/(a*d-b*c)^6/g^3*B^2*ln(b/d*e+(a*d-b*c)/(d*x+c)/d*e)/(d*x+c)^2*b
^3*c^3-7*d^4/i^3/(a*d-b*c)^6/g^3*A*B*b/(d*x+c)*a^2-1/2*e^2/i^3/(a*d-b*c)^6/
g^3*B^2*b^5/(1/(d*x+c)*a*e-1/(d*x+c)*b*c/d*e+b/d*e)^2*ln(b/d*e+(a*d-b*c)/(d
*x+c)/d*e)^2*c-3/2*d^3/i^3/(a*d-b*c)^6/g^3*A^2/(d*x+c)^2*a*b^2*c^2-15*d^3/i
^3/(a*d-b*c)^6/g^3*B^2*b^2/(d*x+c)*a*c
```

maxima [B] time = 5.72, size = 5583, normalized size = 8.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, alg
orithm="maxima")
```

```
[Out] 1/2*B^2*((12*b^3*d^3*x^3 - b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^
3 + 18*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d
^3)*x)/((b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^
5 + a^4*b^2*d^6)*g^3*i^3*x^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c
^3*d^3 + 2*a^3*b^3*c^2*d^4 - 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^
6*c^6 - 9*a^2*b^4*c^4*d^2 + 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^
```

```
6)*g^3*i^3*x^2 + 2*(a*b^5*c^6 - 3*a^2*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4
*b^2*c^3*d^3 - 3*a^5*b*c^2*d^4 + a^6*c*d^5)*g^3*i^3*x + (a^2*b^4*c^6 - 4*a^
3*b^3*c^5*d + 6*a^4*b^2*c^4*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d^4)*g^3*i^3) +
 12*b^2*d^2*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 1
0*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3) - 12*b^2*d^2*log(d*x
+ c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 +
5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c))^2 +
 A*B*((12*b^3*d^3*x^3 - b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^3 +
 18*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d^3)
*x)/((b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^5 +
 a^4*b^2*d^6)*g^3*i^3*x^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c^3*
d^3 + 2*a^3*b^3*c^2*d^4 - 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^6*c
^6 - 9*a^2*b^4*c^4*d^2 + 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^6)*
g^3*i^3*x^2 + 2*(a*b^5*c^6 - 3*a^2*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4*b^
2*c^3*d^3 - 3*a^5*b*c^2*d^4 + a^6*c*d^5)*g^3*i^3*x + (a^2*b^4*c^6 - 4*a^3*b
^3*c^5*d + 6*a^4*b^2*c^4*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d^4)*g^3*i^3) + 12
*b^2*d^2*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a
^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3) - 12*b^2*d^2*log(d*x + c
)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a
^4*b*c*d^4 - a^5*d^5)*g^3*i^3))*log(b*e*x/(d*x + c) + a*e/(d*x + c)) - 1/4*
B^2*(2*(b^4*c^4 - 16*a*b^3*c^3*d + 30*a^2*b^2*c^2*d^2 - 16*a^3*b*c*d^3 + a^
4*d^4 - 12*(b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 12*(b^4*d^4*x^
4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^
3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x +
 a)^2 - 24*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 +
 (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b
^2*c*d^3)*x)*log(b*x + a)*log(d*x + c) + 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2
+ 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^
4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(d*x + c)^2 - 12*(b^4*c^3*
d - a*b^3*c^2*d^2 - a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*e*x/(d*x + c) + a*e
/(d*x + c))/(a^2*b^5*c^7*g^3*i^3 - 5*a^3*b^4*c^6*d*g^3*i^3 + 10*a^4*b^3*c^5
*d^2*g^3*i^3 - 10*a^5*b^2*c^4*d^3*g^3*i^3 + 5*a^6*b*c^3*d^4*g^3*i^3 - a^7*c
^2*d^5*g^3*i^3 + (b^7*c^5*d^2*g^3*i^3 - 5*a*b^6*c^4*d^3*g^3*i^3 + 10*a^2*b^
5*c^3*d^4*g^3*i^3 - 10*a^3*b^4*c^2*d^5*g^3*i^3 + 5*a^4*b^3*c*d^6*g^3*i^3 -
a^5*b^2*d^7*g^3*i^3)*x^4 + 2*(b^7*c^6*d*g^3*i^3 - 4*a*b^6*c^5*d^2*g^3*i^3 +
 5*a^2*b^5*c^4*d^3*g^3*i^3 - 5*a^4*b^3*c^2*d^5*g^3*i^3 + 4*a^5*b^2*c*d^6*g^
3*i^3 - a^6*b*d^7*g^3*i^3)*x^3 + (b^7*c^7*g^3*i^3 - a*b^6*c^6*d*g^3*i^3 - 9
*a^2*b^5*c^5*d^2*g^3*i^3 + 25*a^3*b^4*c^4*d^3*g^3*i^3 - 25*a^4*b^3*c^3*d^4*
g^3*i^3 + 9*a^5*b^2*c^2*d^5*g^3*i^3 + a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3
)*x^2 + 2*(a*b^6*c^7*g^3*i^3 - 4*a^2*b^5*c^6*d*g^3*i^3 + 5*a^3*b^4*c^5*d^2*
g^3*i^3 - 5*a^5*b^2*c^3*d^4*g^3*i^3 + 4*a^6*b*c^2*d^5*g^3*i^3 - a^7*c*d^6*g
^3*i^3)*x) + (b^4*c^4 - 32*a*b^3*c^3*d + 32*a^3*b*c*d^3 - a^4*d^4 - 60*(b^4
*c*d^3 - a*b^3*d^4)*x^3 - 8*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 +
 a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^
3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)^3 - 24*(b^4*d^4*x^4 + a^2*b^2*c^
2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*
b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)*log(d*x +
c)^2 + 8*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (
b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2
*c*d^3)*x)*log(d*x + c)^3 - 90*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^2 - 4*(7*b^4*c
^3*d + 24*a*b^3*c^2*d^2 - 24*a^2*b^2*c*d^3 - 7*a^3*b*d^4)*x - 60*(b^4*d^4*x
^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b
^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x
+ a) + 12*(5*b^4*d^4*x^4 + 5*a^2*b^2*c^2*d^2 + 10*(b^4*c*d^3 + a*b^3*d^4)*x
^3 + 5*(b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(b^4*d^4*x^4 + a
^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d
^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)^2
 + 10*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(d*x + c))/(a^2*b^5*c^7*g^3*i^3
 - 5*a^3*b^4*c^6*d*g^3*i^3 + 10*a^4*b^3*c^5*d^2*g^3*i^3 - 10*a^5*b^2*c^4*d^
```

```
3*g^3*i^3 + 5*a^6*b*c^3*d^4*g^3*i^3 - a^7*c^2*d^5*g^3*i^3 + (b^7*c^5*d^2*g^
3*i^3 - 5*a*b^6*c^4*d^3*g^3*i^3 + 10*a^2*b^5*c^3*d^4*g^3*i^3 - 10*a^3*b^4*c
^2*d^5*g^3*i^3 + 5*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^3*i^3)*x^4 + 2*(b^
7*c^6*d*g^3*i^3 - 4*a*b^6*c^5*d^2*g^3*i^3 + 5*a^2*b^5*c^4*d^3*g^3*i^3 - 5*a
^4*b^3*c^2*d^5*g^3*i^3 + 4*a^5*b^2*c*d^6*g^3*i^3 - a^6*b*d^7*g^3*i^3)*x^3 +
 (b^7*c^7*g^3*i^3 - a*b^6*c^6*d*g^3*i^3 - 9*a^2*b^5*c^5*d^2*g^3*i^3 + 25*a^
3*b^4*c^4*d^3*g^3*i^3 - 25*a^4*b^3*c^3*d^4*g^3*i^3 + 9*a^5*b^2*c^2*d^5*g^3*
i^3 + a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*x^2 + 2*(a*b^6*c^7*g^3*i^3 - 4
*a^2*b^5*c^6*d*g^3*i^3 + 5*a^3*b^4*c^5*d^2*g^3*i^3 - 5*a^5*b^2*c^3*d^4*g^3*
i^3 + 4*a^6*b*c^2*d^5*g^3*i^3 - a^7*c*d^6*g^3*i^3)*x)) + 1/2*A^2*((12*b^3*d
^3*x^3 - b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^3 + 18*(b^3*c*d^2
+ a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d^3)*x)/((b^6*c^4*d
^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^5 + a^4*b^2*d^6)*g
^3*i^3*x^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c^3*d^3 + 2*a^3*b^3
*c^2*d^4 - 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^6*c^6 - 9*a^2*b^4*
c^4*d^2 + 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^6)*g^3*i^3*x^2 + 2
*(a*b^5*c^6 - 3*a^2*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4*b^2*c^3*d^3 - 3*a
^5*b*c^2*d^4 + a^6*c*d^5)*g^3*i^3*x + (a^2*b^4*c^6 - 4*a^3*b^3*c^5*d + 6*a^
4*b^2*c^4*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d^4)*g^3*i^3) + 12*b^2*d^2*log(b*
x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3
+ 5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3) - 12*b^2*d^2*log(d*x + c)/((b^5*c^5 - 5
*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^
5*d^5)*g^3*i^3)) - 1/2*(b^4*c^4 - 16*a*b^3*c^3*d + 30*a^2*b^2*c^2*d^2 - 16*
a^3*b*c*d^3 + a^4*d^4 - 12*(b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2
+ 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*
c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d
^3)*x)*log(b*x + a)^2 - 24*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 +
a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3
*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)*log(d*x + c) + 12*(b^4*d^4*x^4 +
a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*
d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(d*x + c)^
2 - 12*(b^4*c^3*d - a*b^3*c^2*d^2 - a^2*b^2*c*d^3 + a^3*b*d^4)*x)*A*B/(a^2*
b^5*c^7*g^3*i^3 - 5*a^3*b^4*c^6*d*g^3*i^3 + 10*a^4*b^3*c^5*d^2*g^3*i^3 - 10
*a^5*b^2*c^4*d^3*g^3*i^3 + 5*a^6*b*c^3*d^4*g^3*i^3 - a^7*c^2*d^5*g^3*i^3 +
(b^7*c^5*d^2*g^3*i^3 - 5*a*b^6*c^4*d^3*g^3*i^3 + 10*a^2*b^5*c^3*d^4*g^3*i^3
 - 10*a^3*b^4*c^2*d^5*g^3*i^3 + 5*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^3*i
^3)*x^4 + 2*(b^7*c^6*d*g^3*i^3 - 4*a*b^6*c^5*d^2*g^3*i^3 + 5*a^2*b^5*c^4*d^
3*g^3*i^3 - 5*a^4*b^3*c^2*d^5*g^3*i^3 + 4*a^5*b^2*c*d^6*g^3*i^3 - a^6*b*d^7
*g^3*i^3)*x^3 + (b^7*c^7*g^3*i^3 - a*b^6*c^6*d*g^3*i^3 - 9*a^2*b^5*c^5*d^2*
g^3*i^3 + 25*a^3*b^4*c^4*d^3*g^3*i^3 - 25*a^4*b^3*c^3*d^4*g^3*i^3 + 9*a^5*b
^2*c^2*d^5*g^3*i^3 + a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*x^2 + 2*(a*b^6*
c^7*g^3*i^3 - 4*a^2*b^5*c^6*d*g^3*i^3 + 5*a^3*b^4*c^5*d^2*g^3*i^3 - 5*a^5*b
^2*c^3*d^4*g^3*i^3 + 4*a^6*b*c^2*d^5*g^3*i^3 - a^7*c*d^6*g^3*i^3)*x)
```

mupad [B] time = 14.31, size = 2155, normalized size = 3.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^3*(c*i + d*i*x)^3
),x)
```

```
[Out] ((2*x*(2*A^2*a^2*b*d^3 + 7*B^2*a^2*b*d^3 + 2*A^2*b^3*c^2*d + 7*B^2*b^3*c^2*
d + 14*A^2*a*b^2*c*d^2 + 31*B^2*a*b^2*c*d^2 - 6*A*B*a^2*b*d^3 + 6*A*B*b^3*c
^2*d))/(a*d - b*c) - (2*A^2*a^3*d^3 + 2*A^2*b^3*c^3 + B^2*a^3*d^3 + B^2*b^3
*c^3 - 2*A*B*a^3*d^3 + 2*A*B*b^3*c^3 - 14*A^2*a*b^2*c^2*d - 14*A^2*a^2*b*c*
d^2 - 31*B^2*a*b^2*c^2*d - 31*B^2*a^2*b*c*d^2 - 30*A*B*a*b^2*c^2*d + 30*A*B
*a^2*b*c*d^2)/(2*(a*d - b*c)) + (6*x^3*(2*A^2*b^3*d^3 + 5*B^2*b^3*d^3))/(a*
d - b*c) + (3*x^2*(6*A^2*a*b^2*d^3 + 15*B^2*a*b^2*d^3 + 6*A^2*b^3*c*d^2 + 1
5*B^2*b^3*c*d^2 - 4*A*B*a*b^2*d^3 + 4*A*B*b^3*c*d^2))/(a*d - b*c))/(x^4*(2*
```

```
a^3*b^2*d^5*g^3*i^3 - 2*b^5*c^3*d^2*g^3*i^3 + 6*a*b^4*c^2*d^3*g^3*i^3 - 6*a
^2*b^3*c*d^4*g^3*i^3) - x*(4*a*b^4*c^5*g^3*i^3 - 4*a^5*c*d^4*g^3*i^3 - 8*a^
2*b^3*c^4*d*g^3*i^3 + 8*a^4*b*c^2*d^3*g^3*i^3) + x^3*(4*a^4*b*d^5*g^3*i^3 -
 4*b^5*c^4*d*g^3*i^3 + 8*a*b^4*c^3*d^2*g^3*i^3 - 8*a^3*b^2*c*d^4*g^3*i^3) +
 x^2*(2*a^5*d^5*g^3*i^3 - 2*b^5*c^5*g^3*i^3 - 2*a*b^4*c^4*d*g^3*i^3 + 2*a^4
*b*c*d^4*g^3*i^3 + 16*a^2*b^3*c^3*d^2*g^3*i^3 - 16*a^3*b^2*c^2*d^3*g^3*i^3)
 - 2*a^2*b^3*c^5*g^3*i^3 + 2*a^5*c^2*d^3*g^3*i^3 + 6*a^3*b^2*c^4*d*g^3*i^3
- 6*a^4*b*c^3*d^2*g^3*i^3) + log((e*(a + b*x))/(c + d*x))^2*((x*((3*B^2*(a*
d + b*c)^2)/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - B^2/(g^3*i^3*(a^2
*d^2 + b^2*c^2 - 2*a*b*c*d)) + (6*B^2*a*b*c*d)/(g^3*i^3*(a^2*d^2 + b^2*c^2
- 2*a*b*c*d)^2)) - (B^2*(a*d + b*c))/(2*g^3*i^3*(a^2*b*d^3 + b^3*c^2*d - 2*
a*b^2*c*d^2)) + (6*B^2*b^2*d^2*x^3)/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d
)^2) + (3*B^2*a*c*(a*d + b*c))/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2)
+ (9*B^2*b*d*x^2*(a*d + b*c))/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2))/
(b*d*x^4 + (a^2*c^2)/(b*d) + (x*(2*a*b*c^2 + 2*a^2*c*d))/(b*d) + (x^2*(a^2*
d^2 + b^2*c^2 + 4*a*b*c*d))/(b*d) + (x^3*(2*a*b*d^2 + 2*b^2*c*d))/(b*d)) -
(6*A*B*b^2*d^2)/(g^3*i^3*(a*d - b*c)^5)) + (log((e*(a + b*x))/(c + d*x))*(x
^2*((6*b*d*(B^2*b*c - B^2*a*d + A*B*a*d + A*B*b*c))/(g^3*i^3*(a^2*d^2 + b^2
*c^2 - 2*a*b*c*d)^2) + (12*A*B*b*d*(a*d + b*c))/(g^3*i^3*(a^2*d^2 + b^2*c^2
 - 2*a*b*c*d)^2)) + x*((6*(a*d + b*c)*(B^2*b*c - B^2*a*d + A*B*a*d + A*B*b*
c))/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - (2*A*B)/(g^3*i^3*(a^2*d^2
 + b^2*c^2 - 2*a*b*c*d)) + (12*A*B*a*b*c*d)/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2
*a*b*c*d)^2)) - (B^2*b*c - B^2*a*d + 2*A*B*a*d + 2*A*B*b*c)/(2*g^3*i^3*(a^2
*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (6*a*c*(B^2*b*c - B^2*a*d + A*B*a*d
+ A*B*b*c))/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (12*A*B*b^2*d^2*x
^3)/(g^3*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2)))/(b*d*x^4 + (a^2*c^2)/(b*d
) + (x*(2*a*b*c^2 + 2*a^2*c*d))/(b*d) + (x^2*(a^2*d^2 + b^2*c^2 + 4*a*b*c*d
))/(b*d) + (x^3*(2*a*b*d^2 + 2*b^2*c*d))/(b*d)) - (2*B^2*b^2*d^2*log((e*(a
+ b*x))/(c + d*x))^3)/(g^3*i^3*(a*d - b*c)^5) + (b^2*d^2*atan((b^2*d^2*((a^
5*d^5*g^3*i^3 + b^5*c^5*g^3*i^3 - 3*a*b^4*c^4*d*g^3*i^3 - 3*a^4*b*c*d^4*g^3
*i^3 + 2*a^2*b^3*c^3*d^2*g^3*i^3 + 2*a^3*b^2*c^2*d^3*g^3*i^3)/(a^4*d^4*g^3*
i^3 + b^4*c^4*g^3*i^3 - 4*a*b^3*c^3*d*g^3*i^3 - 4*a^3*b*c*d^3*g^3*i^3 + 6*a
^2*b^2*c^2*d^2*g^3*i^3) + 2*b*d*x)*(2*A^2 + 5*B^2)*(a^4*d^4*g^3*i^3 + b^4*c
^4*g^3*i^3 - 4*a*b^3*c^3*d*g^3*i^3 - 4*a^3*b*c*d^3*g^3*i^3 + 6*a^2*b^2*c^2*
d^2*g^3*i^3)*3i)/(g^3*i^3*(6*A^2*b^2*d^2 + 15*B^2*b^2*d^2)*(a*d - b*c)^5))*
(2*A^2 + 5*B^2)*6i)/(g^3*i^3*(a*d - b*c)^5)
```

sympy [B] time = 127.92, size = 3720, normalized size = 5.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**3/(d*i*x+c*i)**3,x)
```

```
[Out] -2*B**2*b**2*d**2*log(e*(a + b*x)/(c + d*x))**3/(a**5*d**5*g**3*i**3 - 5*a*
*4*b*c*d**4*g**3*i**3 + 10*a**3*b**2*c**2*d**3*g**3*i**3 - 10*a**2*b**3*c**
3*d**2*g**3*i**3 + 5*a*b**4*c**4*d*g**3*i**3 - b**5*c**5*g**3*i**3) + 3*b**
2*d**2*(2*A**2 + 5*B**2)*log(x + (6*A**2*a*b**2*d**3 + 6*A**2*b**3*c*d**2 +
 15*B**2*a*b**2*d**3 + 15*B**2*b**3*c*d**2 - 3*a**6*b**2*d**8*(2*A**2 + 5*B
**2)/(a*d - b*c)**5 + 18*a**5*b**3*c*d**7*(2*A**2 + 5*B**2)/(a*d - b*c)**5
- 45*a**4*b**4*c**2*d**6*(2*A**2 + 5*B**2)/(a*d - b*c)**5 + 60*a**3*b**5*c*
*3*d**5*(2*A**2 + 5*B**2)/(a*d - b*c)**5 - 45*a**2*b**6*c**4*d**4*(2*A**2 +
 5*B**2)/(a*d - b*c)**5 + 18*a*b**7*c**5*d**3*(2*A**2 + 5*B**2)/(a*d - b*c)
**5 - 3*b**8*c**6*d**2*(2*A**2 + 5*B**2)/(a*d - b*c)**5)/(12*A**2*b**3*d**3
 + 30*B**2*b**3*d**3))/(g**3*i**3*(a*d - b*c)**5) - 3*b**2*d**2*(2*A**2 + 5
*B**2)*log(x + (6*A**2*a*b**2*d**3 + 6*A**2*b**3*c*d**2 + 15*B**2*a*b**2*d*
*3 + 15*B**2*b**3*c*d**2 + 3*a**6*b**2*d**8*(2*A**2 + 5*B**2)/(a*d - b*c)**
5 - 18*a**5*b**3*c*d**7*(2*A**2 + 5*B**2)/(a*d - b*c)**5 + 45*a**4*b**4*c**
2*d**6*(2*A**2 + 5*B**2)/(a*d - b*c)**5 - 60*a**3*b**5*c**3*d**5*(2*A**2 +
5*B**2)/(a*d - b*c)**5 + 45*a**2*b**6*c**4*d**4*(2*A**2 + 5*B**2)/(a*d - b*
```

```
c)**5 - 18*a*b**7*c**5*d**3*(2*A**2 + 5*B**2)/(a*d - b*c)**5 + 3*b**8*c**6*
d**2*(2*A**2 + 5*B**2)/(a*d - b*c)**5)/(12*A**2*b**3*d**3 + 30*B**2*b**3*d*
*3))/(g**3*i**3*(a*d - b*c)**5) + (-2*A*B*a**3*d**3 + 14*A*B*a**2*b*c*d**2
+ 8*A*B*a**2*b*d**3*x + 14*A*B*a*b**2*c**2*d + 56*A*B*a*b**2*c*d**2*x + 36*
A*B*a*b**2*d**3*x**2 - 2*A*B*b**3*c**3 + 8*A*B*b**3*c**2*d*x + 36*A*B*b**3*
c*d**2*x**2 + 24*A*B*b**3*d**3*x**3 + B**2*a**3*d**3 - 15*B**2*a**2*b*c*d**
2 - 12*B**2*a**2*b*d**3*x + 15*B**2*a*b**2*c**2*d - 12*B**2*a*b**2*d**3*x**
2 - B**2*b**3*c**3 + 12*B**2*b**3*c**2*d*x + 12*B**2*b**3*c*d**2*x**2)*log(
e*(a + b*x)/(c + d*x))/(2*a**6*c**2*d**4*g**3*i**3 + 4*a**6*c*d**5*g**3*i**
3*x + 2*a**6*d**6*g**3*i**3*x**2 - 8*a**5*b*c**3*d**3*g**3*i**3 - 12*a**5*b
*c**2*d**4*g**3*i**3*x + 4*a**5*b*d**6*g**3*i**3*x**3 + 12*a**4*b**2*c**4*d
**2*g**3*i**3 + 8*a**4*b**2*c**3*d**3*g**3*i**3*x - 18*a**4*b**2*c**2*d**4*
g**3*i**3*x**2 - 12*a**4*b**2*c*d**5*g**3*i**3*x**3 + 2*a**4*b**2*d**6*g**3
*i**3*x**4 - 8*a**3*b**3*c**5*d*g**3*i**3 + 8*a**3*b**3*c**4*d**2*g**3*i**3
*x + 32*a**3*b**3*c**3*d**3*g**3*i**3*x**2 + 8*a**3*b**3*c**2*d**4*g**3*i**
3*x**3 - 8*a**3*b**3*c*d**5*g**3*i**3*x**4 + 2*a**2*b**4*c**6*g**3*i**3 - 1
2*a**2*b**4*c**5*d*g**3*i**3*x - 18*a**2*b**4*c**4*d**2*g**3*i**3*x**2 + 8*
a**2*b**4*c**3*d**3*g**3*i**3*x**3 + 12*a**2*b**4*c**2*d**4*g**3*i**3*x**4
+ 4*a*b**5*c**6*g**3*i**3*x - 12*a*b**5*c**4*d**2*g**3*i**3*x**3 - 8*a*b**5
*c**3*d**3*g**3*i**3*x**4 + 2*b**6*c**6*g**3*i**3*x**2 + 4*b**6*c**5*d*g**3
*i**3*x**3 + 2*b**6*c**4*d**2*g**3*i**3*x**4) + (-12*A*B*a**2*b**2*c**2*d**
2 - 24*A*B*a**2*b**2*c*d**3*x - 12*A*B*a**2*b**2*d**4*x**2 - 24*A*B*a*b**3*
c**2*d**2*x - 48*A*B*a*b**3*c*d**3*x**2 - 24*A*B*a*b**3*d**4*x**3 - 12*A*B*
b**4*c**2*d**2*x**2 - 24*A*B*b**4*c*d**3*x**3 - 12*A*B*b**4*d**4*x**4 - B**
2*a**4*d**4 + 8*B**2*a**3*b*c*d**3 + 4*B**2*a**3*b*d**4*x + 24*B**2*a**2*b*
*2*c*d**3*x + 18*B**2*a**2*b**2*d**4*x**2 - 8*B**2*a*b**3*c**3*d - 24*B**2*
a*b**3*c**2*d**2*x + 12*B**2*a*b**3*d**4*x**3 + B**2*b**4*c**4 - 4*B**2*b**
4*c**3*d*x - 18*B**2*b**4*c**2*d**2*x**2 - 12*B**2*b**4*c*d**3*x**3)*log(e*
(a + b*x)/(c + d*x))**2/(2*a**7*c**2*d**5*g**3*i**3 + 4*a**7*c*d**6*g**3*i*
*3*x + 2*a**7*d**7*g**3*i**3*x**2 - 10*a**6*b*c**3*d**4*g**3*i**3 - 16*a**6
*b*c**2*d**5*g**3*i**3*x - 2*a**6*b*c*d**6*g**3*i**3*x**2 + 4*a**6*b*d**7*g
**3*i**3*x**3 + 20*a**5*b**2*c**4*d**3*g**3*i**3 + 20*a**5*b**2*c**3*d**4*g
**3*i**3*x - 18*a**5*b**2*c**2*d**5*g**3*i**3*x**2 - 16*a**5*b**2*c*d**6*g*
*3*i**3*x**3 + 2*a**5*b**2*d**7*g**3*i**3*x**4 - 20*a**4*b**3*c**5*d**2*g**
3*i**3 + 50*a**4*b**3*c**3*d**4*g**3*i**3*x**2 + 20*a**4*b**3*c**2*d**5*g**
3*i**3*x**3 - 10*a**4*b**3*c*d**6*g**3*i**3*x**4 + 10*a**3*b**4*c**6*d*g**3
*i**3 - 20*a**3*b**4*c**5*d**2*g**3*i**3*x - 50*a**3*b**4*c**4*d**3*g**3*i*
*3*x**2 + 20*a**3*b**4*c**2*d**5*g**3*i**3*x**4 - 2*a**2*b**5*c**7*g**3*i**
3 + 16*a**2*b**5*c**6*d*g**3*i**3*x + 18*a**2*b**5*c**5*d**2*g**3*i**3*x**2
 - 20*a**2*b**5*c**4*d**3*g**3*i**3*x**3 - 20*a**2*b**5*c**3*d**4*g**3*i**3
*x**4 - 4*a*b**6*c**7*g**3*i**3*x + 2*a*b**6*c**6*d*g**3*i**3*x**2 + 16*a*b
**6*c**5*d**2*g**3*i**3*x**3 + 10*a*b**6*c**4*d**3*g**3*i**3*x**4 - 2*b**7*
c**7*g**3*i**3*x**2 - 4*b**7*c**6*d*g**3*i**3*x**3 - 2*b**7*c**5*d**2*g**3*
i**3*x**4) + (-2*A**2*a**3*d**3 + 14*A**2*a**2*b*c*d**2 + 14*A**2*a*b**2*c*
*2*d - 2*A**2*b**3*c**3 + 2*A*B*a**3*d**3 - 30*A*B*a**2*b*c*d**2 + 30*A*B*a
*b**2*c**2*d - 2*A*B*b**3*c**3 - B**2*a**3*d**3 + 31*B**2*a**2*b*c*d**2 + 3
1*B**2*a*b**2*c**2*d - B**2*b**3*c**3 + x**3*(24*A**2*b**3*d**3 + 60*B**2*b
**3*d**3) + x**2*(36*A**2*a*b**2*d**3 + 36*A**2*b**3*c*d**2 - 24*A*B*a*b**2
*d**3 + 24*A*B*b**3*c*d**2 + 90*B**2*a*b**2*d**3 + 90*B**2*b**3*c*d**2) + x
*(8*A**2*a**2*b*d**3 + 56*A**2*a*b**2*c*d**2 + 8*A**2*b**3*c**2*d - 24*A*B*
a**2*b*d**3 + 24*A*B*b**3*c**2*d + 28*B**2*a**2*b*d**3 + 124*B**2*a*b**2*c*
d**2 + 28*B**2*b**3*c**2*d))/(4*a**6*c**2*d**4*g**3*i**3 - 16*a**5*b*c**3*d
**3*g**3*i**3 + 24*a**4*b**2*c**4*d**2*g**3*i**3 - 16*a**3*b**3*c**5*d*g**3
*i**3 + 4*a**2*b**4*c**6*g**3*i**3 + x**4*(4*a**4*b**2*d**6*g**3*i**3 - 16*
a**3*b**3*c*d**5*g**3*i**3 + 24*a**2*b**4*c**2*d**4*g**3*i**3 - 16*a*b**5*c
**3*d**3*g**3*i**3 + 4*b**6*c**4*d**2*g**3*i**3) + x**3*(8*a**5*b*d**6*g**3
*i**3 - 24*a**4*b**2*c*d**5*g**3*i**3 + 16*a**3*b**3*c**2*d**4*g**3*i**3 +
16*a**2*b**4*c**3*d**3*g**3*i**3 - 24*a*b**5*c**4*d**2*g**3*i**3 + 8*b**6*c
**5*d*g**3*i**3) + x**2*(4*a**6*d**6*g**3*i**3 - 36*a**4*b**2*c**2*d**4*g**
```

```
3*i**3 + 64*a**3*b**3*c**3*d**3*g**3*i**3 - 36*a**2*b**4*c**4*d**2*g**3*i**
3 + 4*b**6*c**6*g**3*i**3) + x*(8*a**6*c*d**5*g**3*i**3 - 24*a**5*b*c**2*d*
*4*g**3*i**3 + 16*a**4*b**2*c**3*d**3*g**3*i**3 + 16*a**3*b**3*c**4*d**2*g*
*3*i**3 - 24*a**2*b**4*c**5*d*g**3*i**3 + 8*a*b**5*c**6*g**3*i**3))
```

3.107 $\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(ag+bgx)^4(ci+dix)^3}\,dx$

Optimal. Leaf size=851

$$-\frac{2B^2(c+dx)^3b^5}{27(bc-ad)^6g^4i^3(a+bx)^3}-\frac{(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2b^5}{3(bc-ad)^6g^4i^3(a+bx)^3}-\frac{2B(c+dx)^3\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)b^5}{9(bc-ad)^6g^4i^3(a+bx)^3}+\frac{5B}{4(bc-}$$

```
[Out] -1/4*B^2*d^5*(b*x+a)^2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2-10*A*b*B*d^4*(b*x+a)/
(-a*d+b*c)^6/g^4/i^3/(d*x+c)+10*b*B^2*d^4*(b*x+a)/(-a*d+b*c)^6/g^4/i^3/(d*x
+c)-20*b^3*B^2*d^2*(d*x+c)/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/4*b^4*B^2*d*(d*x+
c)^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-2/27*b^5*B^2*(d*x+c)^3/(-a*d+b*c)^6/g^4
/i^3/(b*x+a)^3-10*b*B^2*d^4*(b*x+a)*ln(e*(b*x+a)/(d*x+c))/(-a*d+b*c)^6/g^4/
i^3/(d*x+c)+1/2*B*d^5*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)^6/g^
4/i^3/(d*x+c)^2-20*b^3*B*d^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+b*c)
^6/g^4/i^3/(b*x+a)+5/2*b^4*B*d*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-a*d+
b*c)^6/g^4/i^3/(b*x+a)^2-2/9*b^5*B*(d*x+c)^3*(A+B*ln(e*(b*x+a)/(d*x+c)))/(-
a*d+b*c)^6/g^4/i^3/(b*x+a)^3-1/2*d^5*(b*x+a)^2*(A+B*ln(e*(b*x+a)/(d*x+c)))^
2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2+5*b*d^4*(b*x+a)*(A+B*ln(e*(b*x+a)/(d*x+c))
)^2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)-10*b^3*d^2*(d*x+c)*(A+B*ln(e*(b*x+a)/(d*x+
c)))^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/2*b^4*d*(d*x+c)^2*(A+B*ln(e*(b*x+a)/(
d*x+c)))^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-1/3*b^5*(d*x+c)^3*(A+B*ln(e*(b*x+
a)/(d*x+c)))^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^3-10/3*b^2*d^3*(A+B*ln(e*(b*x+a
)/(d*x+c)))^3/B/(-a*d+b*c)^6/g^4/i^3
```

Rubi [C] time = 10.92, antiderivative size = 2454, normalized size of antiderivative = 2.88, number of steps used = 207, number of rules used = 31, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.738, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^4*(c*i + d*i*x)^3
),x]
```

```
[Out] (-2*b^2*B^2)/(27*(b*c - a*d)^3*g^4*i^3*(a + b*x)^3) + (37*b^2*B^2*d)/(36*(b
*c - a*d)^4*g^4*i^3*(a + b*x)^2) - (319*b^2*B^2*d^2)/(18*(b*c - a*d)^5*g^4*
i^3*(a + b*x)) - (B^2*d^3)/(4*(b*c - a*d)^4*g^4*i^3*(c + d*x)^2) - (19*b*B^
2*d^3)/(2*(b*c - a*d)^5*g^4*i^3*(c + d*x)) - (245*b^2*B^2*d^3*Log[a + b*x])
/(9*(b*c - a*d)^6*g^4*i^3) + (10*A*b^2*B*d^3*Log[a + b*x]^2)/((b*c - a*d)^6
*g^4*i^3) + (10*b^2*B^2*d^3*Log[a + b*x]^2)/(3*(b*c - a*d)^6*g^4*i^3) - (10
*b^2*B^2*d^3*Log[a + b*x]*Log[(c + d*x)^(-1)]^2)/((b*c - a*d)^6*g^4*i^3) +
(10*b^2*B^2*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-1)]^2)/((
b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*Log[-((b*c - a*d)/(d*(a + b*x)))]*L
og[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*Lo
g[a + b*x]*Log[(e*(a + b*x))/(c + d*x)]^2)/((b*c - a*d)^6*g^4*i^3) - (2*b^2
*B*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(9*(b*c - a*d)^3*g^4*i^3*(a + b*x)
^3) + (11*b^2*B*d*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(6*(b*c - a*d)^4*g^
4*i^3*(a + b*x)^2) - (47*b^2*B*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3
*(b*c - a*d)^5*g^4*i^3*(a + b*x)) + (B*d^3*(A + B*Log[(e*(a + b*x))/(c + d*
x)]))/(2*(b*c - a*d)^4*g^4*i^3*(c + d*x)^2) + (9*b*B*d^3*(A + B*Log[(e*(a +
 b*x))/(c + d*x)]))/((b*c - a*d)^5*g^4*i^3*(c + d*x)) - (20*b^2*B*d^3*Log[a
 + b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)]))/(3*(b*c - a*d)^6*g^4*i^3) - (
b^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(3*(b*c - a*d)^3*g^4*i^3*(a + b
*x)^3) + (3*b^2*d*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(2*(b*c - a*d)^4*
```

```
g^4*i^3*(a + b*x)^2) - (6*b^2*d^2*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/(
(b*c - a*d)^5*g^4*i^3*(a + b*x)) - (d^3*(A + B*Log[(e*(a + b*x))/(c + d*x)]
)^2)/(2*(b*c - a*d)^4*g^4*i^3*(c + d*x)^2) - (4*b*d^3*(A + B*Log[(e*(a + b*
x))/(c + d*x)])^2)/((b*c - a*d)^5*g^4*i^3*(c + d*x)) - (10*b^2*d^3*Log[a +
b*x]*(A + B*Log[(e*(a + b*x))/(c + d*x)])^2)/((b*c - a*d)^6*g^4*i^3) + (245
*b^2*B^2*d^3*Log[c + d*x])/(9*(b*c - a*d)^6*g^4*i^3) - (10*b^2*B^2*d^3*Log[
a + b*x]^2*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3) - (20*A*b^2*B*d^3*Log[-((d
*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B
^2*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*(b*c - a*d)^6*g^4
*i^3) - (20*b^2*B^2*d^3*Log[a + b*x]*Log[(c + d*x)^(-1)]*Log[c + d*x])/((b*
c - a*d)^6*g^4*i^3) + (20*b^2*B^2*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*(Lo
g[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d*x)])*Log[c + d*
x])/((b*c - a*d)^6*g^4*i^3) + (20*b^2*B*d^3*(A + B*Log[(e*(a + b*x))/(c + d
*x)])*Log[c + d*x])/(3*(b*c - a*d)^6*g^4*i^3) + (10*b^2*d^3*(A + B*Log[(e*(
a + b*x))/(c + d*x)])^2*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3) + (10*A*b^2*B
*d^3*Log[c + d*x]^2)/((b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*Log[c + d*x]
^2)/(3*(b*c - a*d)^6*g^4*i^3) - (10*b^2*B^2*d^3*Log[a + b*x]*Log[c + d*x]^2
)/((b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*Log[(e*(a + b*x))/(c + d*x)]*Lo
g[c + d*x]^2)/((b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*Log[c + d*x]^3)/(3*
(b*c - a*d)^6*g^4*i^3) - (20*A*b^2*B*d^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*
c - a*d)])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*Log[a + b*x]*Log[(b*(c
 + d*x))/(b*c - a*d)])/(3*(b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*Log[a +
b*x]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^6*g^4*i^3) - (20*A*b^2*
B*d^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^6*g^4*i^3) - (
20*b^2*B^2*d^3*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(3*(b*c - a*d)^6*g
^4*i^3) + (20*b^2*B^2*d^3*Log[a + b*x]*PolyLog[2, -((d*(a + b*x))/(b*c - a*
d))])/((b*c - a*d)^6*g^4*i^3) - (20*A*b^2*B*d^3*PolyLog[2, (b*(c + d*x))/(b
*c - a*d)])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*PolyLog[2, (b*(c + d*
x))/(b*c - a*d)])/(3*(b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*Log[(c + d*x)
^(-1)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^6*g^4*i^3) + (20
*b^2*B^2*d^3*(Log[a + b*x] + Log[(c + d*x)^(-1)] - Log[(e*(a + b*x))/(c + d
*x)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^6*g^4*i^3) - (20*
b^2*B^2*d^3*Log[(e*(a + b*x))/(c + d*x)]*PolyLog[2, 1 + (b*c - a*d)/(d*(a +
 b*x))])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*PolyLog[3, -((d*(a + b*x
))/(b*c - a*d))])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*PolyLog[3, (b*(
c + d*x))/(b*c - a*d)])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*PolyLog[3
, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^6*g^4*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
```

```
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
```

```
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(\frac{e(a+bx)}{c+dx}\right)\right)^2}{(107c+107dx)^3(ag+bgx)^4}\,dx=-\frac{2b^2B^2}{33076161(bc-ad)^3g^4(a+bx)^3}+\frac{37b^2B^2d}{44101548(bc-ad)^4g^4(a+bx)^2}-\frac{22050}{}$$

Mathematica [A] time = 3.05, size = 793, normalized size = 0.93

$$-\frac{18B\left(3a^5Bd^5-15a^4bBd^4(2c+dx)+30a^3b^2d^3\left(2A(c+dx)^2-Bdx(4c+3dx)\right)+30a^2b^3d^2\left(6Adx(c+dx)^2+B\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x))/(c + d*x)])^2/((a*g + b*g*x)^4*(c*i + d*
i*x)^3),x]
```

```
[Out] -1/108*(27*(2*A^2 - 2*A*B + B^2)*d^3*(b*c - a*d)^2*(a + b*x)^3 + 54*b*(8*A^
2 - 18*A*B + 19*B^2)*d^3*(b*c - a*d)*(a + b*x)^3*(c + d*x) + 4*b^2*(9*A^2 +
 6*A*B + 2*B^2)*(b*c - a*d)^3*(c + d*x)^2 - 3*b^2*(54*A^2 + 66*A*B + 37*B^2
)*d*(b*c - a*d)^2*(a + b*x)*(c + d*x)^2 + 6*b^2*(108*A^2 + 282*A*B + 319*B^
2)*d^2*(b*c - a*d)*(a + b*x)^2*(c + d*x)^2 + 60*b^2*(18*A^2 + 12*A*B + 49*B
^2)*d^3*(a + b*x)^3*(c + d*x)^2*Log[a + b*x] + 6*B*(b*c - a*d)*(9*(2*A - B)
*d^3*(b*c - a*d)*(a + b*x)^3 + 18*b*(8*A - 9*B)*d^3*(a + b*x)^3*(c + d*x) +
 4*b^2*(3*A + B)*(b*c - a*d)^2*(c + d*x)^2 - 3*b^2*(18*A + 11*B)*d*(b*c - a
*d)*(a + b*x)*(c + d*x)^2 + 6*b^2*(36*A + 47*B)*d^2*(a + b*x)^2*(c + d*x)^2
)*Log[(e*(a + b*x))/(c + d*x)] + 18*B*(3*a^5*B*d^5 - 15*a^4*b*B*d^4*(2*c +
```

```
d*x) + 30*a^3*b^2*d^3*(2*A*(c + d*x)^2 - B*d*x*(4*c + 3*d*x)) + 30*a^2*b^3*
d^2*(6*A*d*x*(c + d*x)^2 + B*(2*c^3 + 6*c^2*d*x - 3*d^3*x^3)) + 15*a*b^4*d*
(12*A*d^2*x^2*(c + d*x)^2 + B*c*(-c^3 + 4*c^2*d*x + 18*c*d^2*x^2 + 12*d^3*x
^3)) + b^5*(60*A*d^3*x^3*(c + d*x)^2 + B*(2*c^5 - 5*c^4*d*x + 20*c^3*d^2*x^
2 + 110*c^2*d^3*x^3 + 100*c*d^4*x^4 + 20*d^5*x^5)))*Log[(e*(a + b*x))/(c +
d*x)]^2 + 360*b^2*B^2*d^3*(a + b*x)^3*(c + d*x)^2*Log[(e*(a + b*x))/(c + d*
x)]^3 - 60*b^2*(18*A^2 + 12*A*B + 49*B^2)*d^3*(a + b*x)^3*(c + d*x)^2*Log[c
 + d*x])/((b*c - a*d)^6*g^4*i^3*(a + b*x)^3*(c + d*x)^2)
```

fricas [B] time = 1.07, size = 2257, normalized size = 2.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, alg
orithm="fricas")
```

```
[Out] -1/108*(4*(9*A^2 + 6*A*B + 2*B^2)*b^5*c^5 - 135*(2*A^2 + 2*A*B + B^2)*a*b^4
*c^4*d + 1080*(A^2 + 2*A*B + 2*B^2)*a^2*b^3*c^3*d^2 - 20*(18*A^2 + 147*A*B
+ 49*B^2)*a^3*b^2*c^2*d^3 - 540*(A^2 - 2*A*B + 2*B^2)*a^4*b*c*d^4 + 27*(2*A
^2 - 2*A*B + B^2)*a^5*d^5 + 60*((18*A^2 + 12*A*B + 49*B^2)*b^5*c*d^4 - (18*
A^2 + 12*A*B + 49*B^2)*a*b^4*d^5)*x^4 + 30*(3*(18*A^2 + 24*A*B + 53*B^2)*b^
5*c^2*d^3 + 2*(18*A^2 - 24*A*B + 37*B^2)*a*b^4*c*d^4 - (90*A^2 + 24*A*B + 2
33*B^2)*a^2*b^3*d^5)*x^3 + 360*(B^2*b^5*d^5*x^5 + B^2*a^3*b^2*c^2*d^3 + (2*
B^2*b^5*c*d^4 + 3*B^2*a*b^4*d^5)*x^4 + (B^2*b^5*c^2*d^3 + 6*B^2*a*b^4*c*d^4
 + 3*B^2*a^2*b^3*d^5)*x^3 + (3*B^2*a*b^4*c^2*d^3 + 6*B^2*a^2*b^3*c*d^4 + B^
2*a^3*b^2*d^5)*x^2 + (3*B^2*a^2*b^3*c^2*d^3 + 2*B^2*a^3*b^2*c*d^4)*x)*log((
b*e*x + a*e)/(d*x + c))^3 + 10*(2*(18*A^2 + 66*A*B + 85*B^2)*b^5*c^3*d^2 +
3*(126*A^2 + 84*A*B + 307*B^2)*a*b^4*c^2*d^3 - 12*(18*A^2 + 39*A*B + 49*B^2
)*a^2*b^3*c*d^4 - (198*A^2 - 84*A*B + 503*B^2)*a^3*b^2*d^5)*x^2 + 18*(20*(3
*A*B + B^2)*b^5*d^5*x^5 + 2*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 60*B^2*a^2*b
^3*c^3*d^2 + 60*A*B*a^3*b^2*c^2*d^3 - 30*B^2*a^4*b*c*d^4 + 3*B^2*a^5*d^5 +
20*(9*A*B*a*b^4*d^5 + (6*A*B + 5*B^2)*b^5*c*d^4)*x^4 + 10*((6*A*B + 11*B^2)
*b^5*c^2*d^3 + 18*(2*A*B + B^2)*a*b^4*c*d^4 + 9*(2*A*B - B^2)*a^2*b^3*d^5)*
x^3 + 10*(2*B^2*b^5*c^3*d^2 + 36*A*B*a^2*b^3*c*d^4 + 9*(2*A*B + 3*B^2)*a*b^
4*c^2*d^3 + 3*(2*A*B - 3*B^2)*a^3*b^2*d^5)*x^2 - 5*(B^2*b^5*c^4*d - 12*B^2*
a*b^4*c^3*d^2 + 3*B^2*a^4*b*d^5 - 36*(A*B + B^2)*a^2*b^3*c^2*d^3 - 24*(A*B
- B^2)*a^3*b^2*c*d^4)*x)*log((b*e*x + a*e)/(d*x + c))^2 - 5*((18*A^2 + 30*A
*B + 19*B^2)*b^5*c^4*d - 108*(2*A^2 + 6*A*B + 7*B^2)*a*b^4*c^3*d^2 - 12*(36
*A^2 - 39*A*B + 59*B^2)*a^2*b^3*c^2*d^3 + 8*(72*A^2 + 39*A*B + 157*B^2)*a^3
*b^2*c*d^4 + 27*(2*A^2 - 6*A*B + 7*B^2)*a^4*b*d^5)*x + 6*(10*(18*A^2 + 12*A
*B + 49*B^2)*b^5*d^5*x^5 + 180*A^2*a^3*b^2*c^2*d^3 + 4*(3*A*B + B^2)*b^5*c^
5 - 45*(2*A*B + B^2)*a*b^4*c^4*d + 360*(A*B + B^2)*a^2*b^3*c^3*d^2 - 180*(A
*B - B^2)*a^4*b*c*d^4 + 9*(2*A*B - B^2)*a^5*d^5 + 10*(2*(18*A^2 + 30*A*B +
55*B^2)*b^5*c*d^4 + 27*(2*A^2 + 5*B^2)*a*b^4*d^5)*x^4 + 10*((18*A^2 + 66*A*
B + 85*B^2)*b^5*c^2*d^3 + 54*(2*A^2 + 2*A*B + 5*B^2)*a*b^4*c*d^4 + 27*(2*A^
2 - 2*A*B + 5*B^2)*a^2*b^3*d^5)*x^3 + 10*(2*(6*A*B + 11*B^2)*b^5*c^3*d^2 +
27*(2*A^2 + 6*A*B + 7*B^2)*a*b^4*c^2*d^3 + 108*(A^2 + 2*B^2)*a^2*b^3*c*d^4
+ 9*(2*A^2 - 6*A*B + 7*B^2)*a^3*b^2*d^5)*x^2 - 5*((6*A*B + 5*B^2)*b^5*c^4*d
 - 36*(2*A*B + 3*B^2)*a*b^4*c^3*d^2 - 108*(A^2 + 2*A*B + 2*B^2)*a^2*b^3*c^2
*d^3 - 72*(A^2 - 2*A*B + 2*B^2)*a^3*b^2*c*d^4 + 9*(2*A*B - 3*B^2)*a^4*b*d^5
)*x)*log((b*e*x + a*e)/(d*x + c)))/((b^9*c^6*d^2 - 6*a*b^8*c^5*d^3 + 15*a^2
*b^7*c^4*d^4 - 20*a^3*b^6*c^3*d^5 + 15*a^4*b^5*c^2*d^6 - 6*a^5*b^4*c*d^7 +
a^6*b^3*d^8)*g^4*i^3*x^5 + (2*b^9*c^7*d - 9*a*b^8*c^6*d^2 + 12*a^2*b^7*c^5*
d^3 + 5*a^3*b^6*c^4*d^4 - 30*a^4*b^5*c^3*d^5 + 33*a^5*b^4*c^2*d^6 - 16*a^6*
b^3*c*d^7 + 3*a^7*b^2*d^8)*g^4*i^3*x^4 + (b^9*c^8 - 18*a^2*b^7*c^6*d^2 + 52
*a^3*b^6*c^5*d^3 - 60*a^4*b^5*c^4*d^4 + 24*a^5*b^4*c^3*d^5 + 10*a^6*b^3*c^2
*d^6 - 12*a^7*b^2*c*d^7 + 3*a^8*b*d^8)*g^4*i^3*x^3 + (3*a*b^8*c^8 - 12*a^2*
b^7*c^7*d + 10*a^3*b^6*c^6*d^2 + 24*a^4*b^5*c^5*d^3 - 60*a^5*b^4*c^4*d^4 +
52*a^6*b^3*c^3*d^5 - 18*a^7*b^2*c^2*d^6 + a^9*d^8)*g^4*i^3*x^2 + (3*a^2*b^7
```

```
*c^8 - 16*a^3*b^6*c^7*d + 33*a^4*b^5*c^6*d^2 - 30*a^5*b^4*c^5*d^3 + 5*a^6*b
^3*c^4*d^4 + 12*a^7*b^2*c^3*d^5 - 9*a^8*b*c^2*d^6 + 2*a^9*c*d^7)*g^4*i^3*x
+ (a^3*b^6*c^8 - 6*a^4*b^5*c^7*d + 15*a^5*b^4*c^6*d^2 - 20*a^6*b^3*c^5*d^3
+ 15*a^7*b^2*c^4*d^4 - 6*a^8*b*c^3*d^5 + a^9*c^2*d^6)*g^4*i^3)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.06, size = 5731, normalized size = 6.73

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln((b*x+a)/(d*x+c)*e)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)
```

```
[Out] result too large to display
```

maxima [**B**] time = 12.47, size = 9282, normalized size = 10.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)/(d*x+c)))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, alg
orithm="maxima")
```

```
[Out] -1/6*B^2*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2*c^2*d^2
 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 + 10*(2*
b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - 11*a*b^
3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2 - 5*a*b^7*c^4*
d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d
^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a
^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4
*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3
 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^
4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c
^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g
^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 - 10*a^
5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*g^4*i^3*
x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^
3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*x + a)/((b^6
*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2
*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x + c)/((b^
6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^
2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))*log(b*e*x/(d*x + c) + a*e/(d
*x + c))^2 - 1/3*A*B*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2
*b^2*c^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*
x^3 + 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3
*d - 11*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2 -
5*a*b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6
 - a^5*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^
4*d^3 + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*
b^2*d^7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3
```

```
*b^5*c^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a
^7*b*d^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 +
25*a^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6
- a^8*d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5
*d^2 - 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d
^6)*g^4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^
6*b^2*c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*
x + a)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3
+ 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d
*x + c)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3
 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))*log(b*e*x/(d*x +
 c) + a*e/(d*x + c)) - 1/108*B^2*(6*(4*b^5*c^5 - 45*a*b^4*c^4*d + 360*a^2*b
^3*c^3*d^2 - 490*a^3*b^2*c^2*d^3 + 180*a^4*b*c*d^4 - 9*a^5*d^5 + 120*(b^5*c
*d^4 - a*b^4*d^5)*x^4 + 120*(3*b^5*c^2*d^3 - 2*a*b^4*c*d^4 - a^2*b^3*d^5)*x
^3 + 20*(11*b^5*c^3*d^2 + 21*a*b^4*c^2*d^3 - 39*a^2*b^3*c*d^4 + 7*a^3*b^2*d
^5)*x^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*
x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3
+ 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4
)*x)*log(b*x + a)^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3
*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*
b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a
^3*b^2*c*d^4)*x)*log(d*x + c)^2 - 5*(5*b^5*c^4*d - 108*a*b^4*c^3*d^2 + 78*a
^2*b^3*c^2*d^3 + 52*a^3*b^2*c*d^4 - 27*a^4*b*d^5)*x + 120*(b^5*d^5*x^5 + a^
3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*
d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5
)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a) - 120*(b^5*d^
5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 +
6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a
^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x - 3*(b^5*d^5*x^5
+ a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^
4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2
*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a))*log(d*x
+ c))*log(b*e*x/(d*x + c) + a*e/(d*x + c))/(a^3*b^6*c^8*g^4*i^3 - 6*a^4*b^5
*c^7*d*g^4*i^3 + 15*a^5*b^4*c^6*d^2*g^4*i^3 - 20*a^6*b^3*c^5*d^3*g^4*i^3 +
15*a^7*b^2*c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*d^5*g^4*i^3 + a^9*c^2*d^6*g^4*i^3
+ (b^9*c^6*d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*g^4*i^3 + 15*a^2*b^7*c^4*d^4*g^4*i
^3 - 20*a^3*b^6*c^3*d^5*g^4*i^3 + 15*a^4*b^5*c^2*d^6*g^4*i^3 - 6*a^5*b^4*c*
d^7*g^4*i^3 + a^6*b^3*d^8*g^4*i^3)*x^5 + (2*b^9*c^7*d*g^4*i^3 - 9*a*b^8*c^6
*d^2*g^4*i^3 + 12*a^2*b^7*c^5*d^3*g^4*i^3 + 5*a^3*b^6*c^4*d^4*g^4*i^3 - 30*
a^4*b^5*c^3*d^5*g^4*i^3 + 33*a^5*b^4*c^2*d^6*g^4*i^3 - 16*a^6*b^3*c*d^7*g^4
*i^3 + 3*a^7*b^2*d^8*g^4*i^3)*x^4 + (b^9*c^8*g^4*i^3 - 18*a^2*b^7*c^6*d^2*g
^4*i^3 + 52*a^3*b^6*c^5*d^3*g^4*i^3 - 60*a^4*b^5*c^4*d^4*g^4*i^3 + 24*a^5*b
^4*c^3*d^5*g^4*i^3 + 10*a^6*b^3*c^2*d^6*g^4*i^3 - 12*a^7*b^2*c*d^7*g^4*i^3
+ 3*a^8*b*d^8*g^4*i^3)*x^3 + (3*a*b^8*c^8*g^4*i^3 - 12*a^2*b^7*c^7*d*g^4*i^
3 + 10*a^3*b^6*c^6*d^2*g^4*i^3 + 24*a^4*b^5*c^5*d^3*g^4*i^3 - 60*a^5*b^4*c^
4*d^4*g^4*i^3 + 52*a^6*b^3*c^3*d^5*g^4*i^3 - 18*a^7*b^2*c^2*d^6*g^4*i^3 + a
^9*d^8*g^4*i^3)*x^2 + (3*a^2*b^7*c^8*g^4*i^3 - 16*a^3*b^6*c^7*d*g^4*i^3 + 3
3*a^4*b^5*c^6*d^2*g^4*i^3 - 30*a^5*b^4*c^5*d^3*g^4*i^3 + 5*a^6*b^3*c^4*d^4*
g^4*i^3 + 12*a^7*b^2*c^3*d^5*g^4*i^3 - 9*a^8*b*c^2*d^6*g^4*i^3 + 2*a^9*c*d^
7*g^4*i^3)*x) + (8*b^5*c^5 - 135*a*b^4*c^4*d + 2160*a^2*b^3*c^3*d^2 - 980*a
^3*b^2*c^2*d^3 - 1080*a^4*b*c*d^4 + 27*a^5*d^5 + 2940*(b^5*c*d^4 - a*b^4*d^
5)*x^4 + 30*(159*b^5*c^2*d^3 + 74*a*b^4*c*d^4 - 233*a^2*b^3*d^5)*x^3 + 360*
(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2
*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*
d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x +
 a)^3 - 360*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^
4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 +
6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*
x)*log(d*x + c)^3 + 10*(170*b^5*c^3*d^2 + 921*a*b^4*c^2*d^3 - 588*a^2*b^3*c
```

```
*d^4 - 503*a^3*b^2*d^5)*x^2 - 360*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c
*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3
 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d
^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a)^2 - 360*(b^5*d^5*x^5 + a^3*b^2*c^2*d^
3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*
b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a
^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x - 3*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2
*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^
5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3
*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a))*log(d*x + c)^2 - 5*(19*b^5*c^4
*d - 756*a*b^4*c^3*d^2 - 708*a^2*b^3*c^2*d^3 + 1256*a^3*b^2*c*d^4 + 189*a^4
*b*d^5)*x + 2940*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^
5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d
^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*
d^4)*x)*log(b*x + a) - 60*(49*b^5*d^5*x^5 + 49*a^3*b^2*c^2*d^3 + 49*(2*b^5*
c*d^4 + 3*a*b^4*d^5)*x^4 + 49*(b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)
*x^3 + 49*(3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + 18*(b^5*d
^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 +
 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 +
a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a)^2
+ 49*(3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x - 12*(b^5*d^5*x^5 + a^3*b^2*c^
2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*
a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 +
(3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a))*log(d*x + c))/(a^3*b
^6*c^8*g^4*i^3 - 6*a^4*b^5*c^7*d*g^4*i^3 + 15*a^5*b^4*c^6*d^2*g^4*i^3 - 20*
a^6*b^3*c^5*d^3*g^4*i^3 + 15*a^7*b^2*c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*d^5*g^4*
i^3 + a^9*c^2*d^6*g^4*i^3 + (b^9*c^6*d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*g^4*i^3
+ 15*a^2*b^7*c^4*d^4*g^4*i^3 - 20*a^3*b^6*c^3*d^5*g^4*i^3 + 15*a^4*b^5*c^2*
d^6*g^4*i^3 - 6*a^5*b^4*c*d^7*g^4*i^3 + a^6*b^3*d^8*g^4*i^3)*x^5 + (2*b^9*c
^7*d*g^4*i^3 - 9*a*b^8*c^6*d^2*g^4*i^3 + 12*a^2*b^7*c^5*d^3*g^4*i^3 + 5*a^3
*b^6*c^4*d^4*g^4*i^3 - 30*a^4*b^5*c^3*d^5*g^4*i^3 + 33*a^5*b^4*c^2*d^6*g^4*
i^3 - 16*a^6*b^3*c*d^7*g^4*i^3 + 3*a^7*b^2*d^8*g^4*i^3)*x^4 + (b^9*c^8*g^4*
i^3 - 18*a^2*b^7*c^6*d^2*g^4*i^3 + 52*a^3*b^6*c^5*d^3*g^4*i^3 - 60*a^4*b^5*
c^4*d^4*g^4*i^3 + 24*a^5*b^4*c^3*d^5*g^4*i^3 + 10*a^6*b^3*c^2*d^6*g^4*i^3 -
 12*a^7*b^2*c*d^7*g^4*i^3 + 3*a^8*b*d^8*g^4*i^3)*x^3 + (3*a*b^8*c^8*g^4*i^3
 - 12*a^2*b^7*c^7*d*g^4*i^3 + 10*a^3*b^6*c^6*d^2*g^4*i^3 + 24*a^4*b^5*c^5*d
^3*g^4*i^3 - 60*a^5*b^4*c^4*d^4*g^4*i^3 + 52*a^6*b^3*c^3*d^5*g^4*i^3 - 18*a
^7*b^2*c^2*d^6*g^4*i^3 + a^9*d^8*g^4*i^3)*x^2 + (3*a^2*b^7*c^8*g^4*i^3 - 16
*a^3*b^6*c^7*d*g^4*i^3 + 33*a^4*b^5*c^6*d^2*g^4*i^3 - 30*a^5*b^4*c^5*d^3*g^
4*i^3 + 5*a^6*b^3*c^4*d^4*g^4*i^3 + 12*a^7*b^2*c^3*d^5*g^4*i^3 - 9*a^8*b*c^
2*d^6*g^4*i^3 + 2*a^9*c*d^7*g^4*i^3)*x)) - 1/6*A^2*((60*b^4*d^4*x^4 + 2*b^4
*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2*c^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 3
0*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11
*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - 11*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*
a^3*b*d^4)*x)/((b^8*c^5*d^2 - 5*a*b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3
*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d -
7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d
^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d
 - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c
^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*
b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*
a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*
a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 - 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4
 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*g^4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*
d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5
)*g^4*i^3) + 60*b^2*d^3*log(b*x + a)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4
*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^
6)*g^4*i^3) - 60*b^2*d^3*log(d*x + c)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^
4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d
```

```
^6)*g^4*i^3)) - 1/18*(4*b^5*c^5 - 45*a*b^4*c^4*d + 360*a^2*b^3*c^3*d^2 - 49
0*a^3*b^2*c^2*d^3 + 180*a^4*b*c*d^4 - 9*a^5*d^5 + 120*(b^5*c*d^4 - a*b^4*d^
5)*x^4 + 120*(3*b^5*c^2*d^3 - 2*a*b^4*c*d^4 - a^2*b^3*d^5)*x^3 + 20*(11*b^5
*c^3*d^2 + 21*a*b^4*c^2*d^3 - 39*a^2*b^3*c*d^4 + 7*a^3*b^2*d^5)*x^2 - 180*(
b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*
d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d
^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x +
a)^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4
 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6
*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x
)*log(d*x + c)^2 - 5*(5*b^5*c^4*d - 108*a*b^4*c^3*d^2 + 78*a^2*b^3*c^2*d^3
+ 52*a^3*b^2*c*d^4 - 27*a^4*b*d^5)*x + 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 +
 (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3
*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*
b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a) - 120*(b^5*d^5*x^5 + a^3*b^2
*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 +
 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2
 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x - 3*(b^5*d^5*x^5 + a^3*b^2*c^2*d
^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2
*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*
a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a))*log(d*x + c))*A*B/(a^3*
b^6*c^8*g^4*i^3 - 6*a^4*b^5*c^7*d*g^4*i^3 + 15*a^5*b^4*c^6*d^2*g^4*i^3 - 20
*a^6*b^3*c^5*d^3*g^4*i^3 + 15*a^7*b^2*c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*d^5*g^4
*i^3 + a^9*c^2*d^6*g^4*i^3 + (b^9*c^6*d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*g^4*i^3
 + 15*a^2*b^7*c^4*d^4*g^4*i^3 - 20*a^3*b^6*c^3*d^5*g^4*i^3 + 15*a^4*b^5*c^2
*d^6*g^4*i^3 - 6*a^5*b^4*c*d^7*g^4*i^3 + a^6*b^3*d^8*g^4*i^3)*x^5 + (2*b^9*
c^7*d*g^4*i^3 - 9*a*b^8*c^6*d^2*g^4*i^3 + 12*a^2*b^7*c^5*d^3*g^4*i^3 + 5*a^
3*b^6*c^4*d^4*g^4*i^3 - 30*a^4*b^5*c^3*d^5*g^4*i^3 + 33*a^5*b^4*c^2*d^6*g^4
*i^3 - 16*a^6*b^3*c*d^7*g^4*i^3 + 3*a^7*b^2*d^8*g^4*i^3)*x^4 + (b^9*c^8*g^4
*i^3 - 18*a^2*b^7*c^6*d^2*g^4*i^3 + 52*a^3*b^6*c^5*d^3*g^4*i^3 - 60*a^4*b^5
*c^4*d^4*g^4*i^3 + 24*a^5*b^4*c^3*d^5*g^4*i^3 + 10*a^6*b^3*c^2*d^6*g^4*i^3
- 12*a^7*b^2*c*d^7*g^4*i^3 + 3*a^8*b*d^8*g^4*i^3)*x^3 + (3*a*b^8*c^8*g^4*i^
3 - 12*a^2*b^7*c^7*d*g^4*i^3 + 10*a^3*b^6*c^6*d^2*g^4*i^3 + 24*a^4*b^5*c^5*
d^3*g^4*i^3 - 60*a^5*b^4*c^4*d^4*g^4*i^3 + 52*a^6*b^3*c^3*d^5*g^4*i^3 - 18*
a^7*b^2*c^2*d^6*g^4*i^3 + a^9*d^8*g^4*i^3)*x^2 + (3*a^2*b^7*c^8*g^4*i^3 - 1
6*a^3*b^6*c^7*d*g^4*i^3 + 33*a^4*b^5*c^6*d^2*g^4*i^3 - 30*a^5*b^4*c^5*d^3*g
^4*i^3 + 5*a^6*b^3*c^4*d^4*g^4*i^3 + 12*a^7*b^2*c^3*d^5*g^4*i^3 - 9*a^8*b*c
^2*d^6*g^4*i^3 + 2*a^9*c*d^7*g^4*i^3)*x)
```

mupad [B] time = 18.95, size = 3550, normalized size = 4.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x))/(c + d*x)))^2/((a*g + b*g*x)^4*(c*i + d*i*x)^3
),x)
```

```
[Out] ((36*A^2*b^4*c^4 - 54*A^2*a^4*d^4 - 27*B^2*a^4*d^4 + 8*B^2*b^4*c^4 + 54*A*B
*a^4*d^4 + 24*A*B*b^4*c^4 + 846*A^2*a^2*b^2*c^2*d^2 + 2033*B^2*a^2*b^2*c^2*
d^2 - 234*A^2*a*b^3*c^3*d + 486*A^2*a^3*b*c*d^3 - 127*B^2*a*b^3*c^3*d + 105
3*B^2*a^3*b*c*d^3 - 246*A*B*a*b^3*c^3*d - 1026*A*B*a^3*b*c*d^3 + 1914*A*B*a
^2*b^2*c^2*d^2)/(6*(a*d - b*c)) + (10*x^4*(18*A^2*b^4*d^4 + 49*B^2*b^4*d^4
+ 12*A*B*b^4*d^4))/(a*d - b*c) + (5*x*(54*A^2*a^3*b*d^4 + 189*B^2*a^3*b*d^4
 - 18*A^2*b^4*c^3*d - 19*B^2*b^4*c^3*d + 198*A^2*a*b^3*c^2*d^2 + 630*A^2*a^
2*b^2*c*d^3 + 737*B^2*a*b^3*c^2*d^2 + 1445*B^2*a^2*b^2*c*d^3 - 162*A*B*a^3*
b*d^4 - 30*A*B*b^4*c^3*d + 618*A*B*a*b^3*c^2*d^2 + 150*A*B*a^2*b^2*c*d^3))/
(6*(a*d - b*c)) + (5*x^2*(198*A^2*a^2*b^2*d^4 + 503*B^2*a^2*b^2*d^4 + 36*A^
2*b^4*c^2*d^2 + 170*B^2*b^4*c^2*d^2 - 84*A*B*a^2*b^2*d^4 + 132*A*B*b^4*c^2*
d^2 + 414*A^2*a*b^3*c*d^3 + 1091*B^2*a*b^3*c*d^3 + 384*A*B*a*b^3*c*d^3))/(3
*(a*d - b*c)) + (5*x^3*(90*A^2*a*b^3*d^4 + 233*B^2*a*b^3*d^4 + 54*A^2*b^4*c
```

```
*d^3 + 159*B^2*b^4*c*d^3 + 24*A*B*a*b^3*d^4 + 72*A*B*b^4*c*d^3))/(a*d - b*c
))/(x^5*(18*a^4*b^3*d^6*g^4*i^3 + 18*b^7*c^4*d^2*g^4*i^3 - 72*a*b^6*c^3*d^3
*g^4*i^3 - 72*a^3*b^4*c*d^5*g^4*i^3 + 108*a^2*b^5*c^2*d^4*g^4*i^3) + x*(54*
a^2*b^5*c^6*g^4*i^3 + 36*a^7*c*d^5*g^4*i^3 - 180*a^3*b^4*c^5*d*g^4*i^3 - 90
*a^6*b*c^2*d^4*g^4*i^3 + 180*a^4*b^3*c^4*d^2*g^4*i^3) + x^2*(18*a^7*d^6*g^4
*i^3 + 54*a*b^6*c^6*g^4*i^3 + 36*a^6*b*c*d^5*g^4*i^3 - 108*a^2*b^5*c^5*d*g^
4*i^3 - 90*a^3*b^4*c^4*d^2*g^4*i^3 + 360*a^4*b^3*c^3*d^3*g^4*i^3 - 270*a^5*
b^2*c^2*d^4*g^4*i^3) + x^3*(18*b^7*c^6*g^4*i^3 + 54*a^6*b*d^6*g^4*i^3 + 36*
a*b^6*c^5*d*g^4*i^3 - 108*a^5*b^2*c*d^5*g^4*i^3 - 270*a^2*b^5*c^4*d^2*g^4*i
^3 + 360*a^3*b^4*c^3*d^3*g^4*i^3 - 90*a^4*b^3*c^2*d^4*g^4*i^3) + x^4*(54*a^
5*b^2*d^6*g^4*i^3 + 36*b^7*c^5*d*g^4*i^3 - 90*a*b^6*c^4*d^2*g^4*i^3 - 180*a
^4*b^3*c*d^5*g^4*i^3 + 180*a^3*b^4*c^2*d^4*g^4*i^3) + 18*a^3*b^4*c^6*g^4*i^
3 + 18*a^7*c^2*d^4*g^4*i^3 - 72*a^4*b^3*c^5*d*g^4*i^3 - 72*a^6*b*c^3*d^3*g^
4*i^3 + 108*a^5*b^2*c^4*d^2*g^4*i^3) + log((e*(a + b*x))/(c + d*x))^2*((x*(
(5*B^2*(a*d + b*c)*(2*a*d + b*c))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d
)^2) - (5*B^2)/(6*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (5*B^2*a*b*c*d
)/(g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (20*B^2*a*b*c*d*(a*d + b*c)
)/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) + x^3*((5*B^2*b^
2*d^2)/(g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (20*B^2*b^2*d^2*(a*d +
 b*c))/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) + x^2*((5*B
^2*b*d*(a*d + b*c))/(g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (5*B^2*b*
d*(2*a*d + b*c))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (10*B^2*b^
2*d^3*((2*a*c*(a*d - b*c))/d + ((a*d + b*c)^2*(a*d - b*c))/(b*d^2)))/(g^4*i
^3*(a*d - b*c)^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - (B^2*(3*a*d + 2*b*c))/
(6*g^4*i^3*(a^2*b*d^3 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (5*B^2*a*c*(2*a*d + b
*c))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (10*B^2*b^3*d^3*x^4)/(
g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (10*B^2*a^2*b*c^2*
d)/(g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(b^2*d*x^5 + (x
^4*(3*a*b^2*d^2 + 2*b^3*c*d))/(b*d) + (a^3*c^2)/(b*d) + (x^2*(a^3*d^2 + 3*a
*b^2*c^2 + 6*a^2*b*c*d))/(b*d) + (x^3*(b^3*c^2 + 3*a^2*b*d^2 + 6*a*b^2*c*d)
)/(b*d) + (x*(3*a^2*b*c^2 + 2*a^3*c*d))/(b*d)) - (10*B*b^2*d^3*(3*A + B))/(
3*g^4*i^3*(a*d - b*c)^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) + (log((e*(a + b*
x))/(c + d*x))*(x^2*((10*b*d*(B^2*b*c - 7*B^2*a*d + 6*A*B*a*d + 3*A*B*b*c))
/(9*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - (10*(a*d + b*c)*(2*B^2*b*d
 - 3*A*B*b*d))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (20*B*b^2*d^
3*(3*A + B)*((2*a*c*(a*d - b*c))/d + ((a*d + b*c)^2*(a*d - b*c))/(b*d^2)))/
(3*g^4*i^3*(a*d - b*c)^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - x^3*((10*b*d*(
2*B^2*b*d - 3*A*B*b*d))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - (40
*B*b^2*d^2*(3*A + B)*(a*d + b*c))/(3*g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c
^2 - 2*a*b*c*d))) + x*((5*(B^2 - 6*A*B))/(18*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2
*a*b*c*d)) + (10*(a*d + b*c)*(B^2*b*c - 7*B^2*a*d + 6*A*B*a*d + 3*A*B*b*c))
/(9*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - (10*a*c*(2*B^2*b*d - 3*A*B
*b*d))/(3*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (40*B*a*b*c*d*(3*A +
 B)*(a*d + b*c))/(3*g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))
 - (4*B^2*b*c - 9*B^2*a*d + 18*A*B*a*d + 12*A*B*b*c)/(18*g^4*i^3*(a^2*b*d^3
 + b^3*c^2*d - 2*a*b^2*c*d^2)) + (10*a*c*(B^2*b*c - 7*B^2*a*d + 6*A*B*a*d +
 3*A*B*b*c))/(9*g^4*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (20*B*b^3*d^3*
x^4*(3*A + B))/(3*g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) +
(20*B*a^2*b*c^2*d*(3*A + B))/(3*g^4*i^3*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 -
2*a*b*c*d))))/(b^2*d*x^5 + (x^4*(3*a*b^2*d^2 + 2*b^3*c*d))/(b*d) + (a^3*c^2
)/(b*d) + (x^2*(a^3*d^2 + 3*a*b^2*c^2 + 6*a^2*b*c*d))/(b*d) + (x^3*(b^3*c^2
 + 3*a^2*b*d^2 + 6*a*b^2*c*d))/(b*d) + (x*(3*a^2*b*c^2 + 2*a^3*c*d))/(b*d))
 + (b^2*d^3*atan((b^2*d^3*(18*A^2 + 49*B^2 + 12*A*B)*(9*a^6*d^6*g^4*i^3 - 9
*b^6*c^6*g^4*i^3 + 36*a*b^5*c^5*d*g^4*i^3 - 36*a^5*b*c*d^5*g^4*i^3 - 45*a^2
*b^4*c^4*d^2*g^4*i^3 + 45*a^4*b^2*c^2*d^4*g^4*i^3)*5i)/(9*g^4*i^3*(a*d - b*
c)^6*(90*A^2*b^2*d^3 + 245*B^2*b^2*d^3 + 60*A*B*b^2*d^3)) + (b^3*d^4*x*(18*
A^2 + 49*B^2 + 12*A*B)*(a^5*d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g
^4*i^3 - 5*a^4*b*c*d^4*g^4*i^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^
2*d^3*g^4*i^3)*10i)/(g^4*i^3*(a*d - b*c)^6*(90*A^2*b^2*d^3 + 245*B^2*b^2*d^
```

```
3 + 60*A*B*b^2*d^3)))*(18*A^2 + 49*B^2 + 12*A*B)*10i)/(9*g^4*i^3*(a*d - b*c
)^6) - (10*B^2*b^2*d^3*log((e*(a + b*x))/(c + d*x))^3)/(3*g^4*i^3*(a*d - b*
c)^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)/(d*x+c)))**2/(b*g*x+a*g)**4/(d*i*x+c*i)**3,x)
[Out] Timed out
```

3.108 $\int (ag+bgx)^3(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\,dx$

Optimal. Leaf size=223

$$\frac{g^3i(a+bx)^4(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A-Bn\right)}{20b^2}+\frac{g^3i(a+bx)^4(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{5b}+\frac{Bg^3in(bc-ad}{20b}$$

```
[Out] -1/20*B*(-a*d+b*c)^4*g^3*i*n*x/b/d^3+1/40*B*(-a*d+b*c)^3*g^3*i*n*(b*x+a)^2/
b^2/d^2-1/60*B*(-a*d+b*c)^2*g^3*i*n*(b*x+a)^3/b^2/d+1/5*g^3*i*(b*x+a)^4*(d*
x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b+1/20*(-a*d+b*c)*g^3*i*(b*x+a)^4*(A-B
*n+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2+1/20*B*(-a*d+b*c)^5*g^3*i*n*ln(d*x+c)/b
^2/d^4
```

Rubi [A] time = 0.39, antiderivative size = 243, normalized size of antiderivative = 1.09, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.098$, Rules used = {2528, 2525, 12, 43}

$$\frac{g^3i(a+bx)^4(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4b^2}+\frac{dg^3i(a+bx)^5\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{5b^2}+\frac{Bg^3in(a+bx)^2(bc-ad)^3}{40b^2d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] -(B*(b*c - a*d)^4*g^3*i*n*x)/(20*b*d^3) + (B*(b*c - a*d)^3*g^3*i*n*(a + b*x
)^2)/(40*b^2*d^2) - (B*(b*c - a*d)^2*g^3*i*n*(a + b*x)^3)/(60*b^2*d) - (B*(
b*c - a*d)*g^3*i*n*(a + b*x)^4)/(20*b^2) + ((b*c - a*d)*g^3*i*(a + b*x)^4*(
A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(4*b^2) + (d*g^3*i*(a + b*x)^5*(A +
B*Log[e*((a + b*x)/(c + d*x))^n]))/(5*b^2) + (B*(b*c - a*d)^5*g^3*i*n*Log[c
 + d*x])/(20*b^2*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
```

```
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (108c+108dx)(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx=\int\left(\frac{108(bc-ad)(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{b}\right.$$

$$=\frac{(108(bc-ad))\int (ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{b}$$

$$=\frac{27(bc-ad)g^3(a+bx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2}$$

$$=\frac{27(bc-ad)g^3(a+bx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2}$$

$$=\frac{27(bc-ad)g^3(a+bx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2}$$

$$=-\frac{27B(bc-ad)^4g^3nx}{5bd^3}+\frac{27B(bc-ad)^3g^3n(a+b}{10b^2d^2}$$

Mathematica [A] time = 0.26, size = 269, normalized size = 1.21

$$\frac{g^3i\left(24d(a+bx)^5\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+30(a+bx)^4(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-\frac{5Bn(bc-ad)^2\left(3d^2(a+bx)\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]),x]
```

```
[Out] (g^3*i*(30*(b*c - a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) +
 24*d*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - (5*B*(b*c - a*d)
^2*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a +
 b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]))/d^4 + (2*B*(b*c - a*d)*n*(12*b*d*(
b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b
*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]))/d^4))/(120*b^2)
```

fricas [B] time = 1.07, size = 720, normalized size = 3.23

$$\frac{24\,Ab^5d^5g^3ix^5+6\left(5\,Ba^4bcd^4-Ba^5d^5\right)g^3in\log\left(bx+a\right)+6\left(Bb^5c^5-5\,Bab^4c^4d+10\,Ba^2b^3c^3d^2-10\,Ba^3b^2c^2d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="fricas")
```

```
[Out] 1/120*(24*A*b^5*d^5*g^3*i*x^5 + 6*(5*B*a^4*b*c*d^4 - B*a^5*d^5)*g^3*i*n*log
(b*x + a) + 6*(B*b^5*c^5 - 5*B*a*b^4*c^4*d + 10*B*a^2*b^3*c^3*d^2 - 10*B*a^
3*b^2*c^2*d^3)*g^3*i*n*log(d*x + c) - 6*((B*b^5*c*d^4 - B*a*b^4*d^5)*g^3*i*
```

```
n - 5*(A*b^5*c*d^4 + 3*A*a*b^4*d^5)*g^3*i)*x^4 - 2*((B*b^5*c^2*d^3 + 10*B*a
*b^4*c*d^4 - 11*B*a^2*b^3*d^5)*g^3*i*n - 60*(A*a*b^4*c*d^4 + A*a^2*b^3*d^5)
*g^3*i)*x^3 + 3*((B*b^5*c^3*d^2 - 5*B*a*b^4*c^2*d^3 - 5*B*a^2*b^3*c*d^4 + 9
*B*a^3*b^2*d^5)*g^3*i*n + 20*(3*A*a^2*b^3*c*d^4 + A*a^3*b^2*d^5)*g^3*i)*x^2
 + 6*(20*A*a^3*b^2*c*d^4*g^3*i - (B*b^5*c^4*d - 5*B*a*b^4*c^3*d^2 + 10*B*a^
2*b^3*c^2*d^3 - 5*B*a^3*b^2*c*d^4 - B*a^4*b*d^5)*g^3*i*n)*x + 6*(4*B*b^5*d^
5*g^3*i*x^5 + 20*B*a^3*b^2*c*d^4*g^3*i*x + 5*(B*b^5*c*d^4 + 3*B*a*b^4*d^5)*
g^3*i*x^4 + 20*(B*a*b^4*c*d^4 + B*a^2*b^3*d^5)*g^3*i*x^3 + 10*(3*B*a^2*b^3*
c*d^4 + B*a^3*b^2*d^5)*g^3*i*x^2)*log(e) + 6*(4*B*b^5*d^5*g^3*i*n*x^5 + 20*
B*a^3*b^2*c*d^4*g^3*i*n*x + 5*(B*b^5*c*d^4 + 3*B*a*b^4*d^5)*g^3*i*n*x^4 + 2
0*(B*a*b^4*c*d^4 + B*a^2*b^3*d^5)*g^3*i*n*x^3 + 10*(3*B*a^2*b^3*c*d^4 + B*a
^3*b^2*d^5)*g^3*i*n*x^2)*log((b*x + a)/(d*x + c)))/(b^2*d^4)
```

giac [B] time = 6.40, size = 3889, normalized size = 17.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="giac")
```

```
[Out] -1/120*(6*(B*b^9*c^6*g^3*i*n - 6*B*a*b^8*c^5*d*g^3*i*n - 5*(b*x + a)*B*b^8*
c^6*d*g^3*i*n/(d*x + c) + 15*B*a^2*b^7*c^4*d^2*g^3*i*n + 30*(b*x + a)*B*a*b
^7*c^5*d^2*g^3*i*n/(d*x + c) + 10*(b*x + a)^2*B*b^7*c^6*d^2*g^3*i*n/(d*x +
c)^2 - 20*B*a^3*b^6*c^3*d^3*g^3*i*n - 75*(b*x + a)*B*a^2*b^6*c^4*d^3*g^3*i*
n/(d*x + c) - 60*(b*x + a)^2*B*a*b^6*c^5*d^3*g^3*i*n/(d*x + c)^2 - 10*(b*x
+ a)^3*B*b^6*c^6*d^3*g^3*i*n/(d*x + c)^3 + 15*B*a^4*b^5*c^2*d^4*g^3*i*n + 1
00*(b*x + a)*B*a^3*b^5*c^3*d^4*g^3*i*n/(d*x + c) + 150*(b*x + a)^2*B*a^2*b^
5*c^4*d^4*g^3*i*n/(d*x + c)^2 + 60*(b*x + a)^3*B*a*b^5*c^5*d^4*g^3*i*n/(d*x
 + c)^3 - 6*B*a^5*b^4*c*d^5*g^3*i*n - 75*(b*x + a)*B*a^4*b^4*c^2*d^5*g^3*i*
n/(d*x + c) - 200*(b*x + a)^2*B*a^3*b^4*c^3*d^5*g^3*i*n/(d*x + c)^2 - 150*(
b*x + a)^3*B*a^2*b^4*c^4*d^5*g^3*i*n/(d*x + c)^3 + B*a^6*b^3*d^6*g^3*i*n +
30*(b*x + a)*B*a^5*b^3*c*d^6*g^3*i*n/(d*x + c) + 150*(b*x + a)^2*B*a^4*b^3*
c^2*d^6*g^3*i*n/(d*x + c)^2 + 200*(b*x + a)^3*B*a^3*b^3*c^3*d^6*g^3*i*n/(d*
x + c)^3 - 5*(b*x + a)*B*a^6*b^2*d^7*g^3*i*n/(d*x + c) - 60*(b*x + a)^2*B*a
^5*b^2*c*d^7*g^3*i*n/(d*x + c)^2 - 150*(b*x + a)^3*B*a^4*b^2*c^2*d^7*g^3*i*
n/(d*x + c)^3 + 10*(b*x + a)^2*B*a^6*b*d^8*g^3*i*n/(d*x + c)^2 + 60*(b*x +
a)^3*B*a^5*b*c*d^8*g^3*i*n/(d*x + c)^3 - 10*(b*x + a)^3*B*a^6*d^9*g^3*i*n/(
d*x + c)^3)*log((b*x + a)/(d*x + c))/(b^5*d^4 - 5*(b*x + a)*b^4*d^5/(d*x +
c) + 10*(b*x + a)^2*b^3*d^6/(d*x + c)^2 - 10*(b*x + a)^3*b^2*d^7/(d*x + c)^
3 + 5*(b*x + a)^4*b*d^8/(d*x + c)^4 - (b*x + a)^5*d^9/(d*x + c)^5) + (5*B*b
^10*c^6*g^3*i*n - 30*B*a*b^9*c^5*d*g^3*i*n - 19*(b*x + a)*B*b^9*c^6*d*g^3*i
*n/(d*x + c) + 75*B*a^2*b^8*c^4*d^2*g^3*i*n + 114*(b*x + a)*B*a*b^8*c^5*d^2
*g^3*i*n/(d*x + c) + 23*(b*x + a)^2*B*b^8*c^6*d^2*g^3*i*n/(d*x + c)^2 - 100
*B*a^3*b^7*c^3*d^3*g^3*i*n - 285*(b*x + a)*B*a^2*b^7*c^4*d^3*g^3*i*n/(d*x +
 c) - 138*(b*x + a)^2*B*a*b^7*c^5*d^3*g^3*i*n/(d*x + c)^2 - 3*(b*x + a)^3*B
*b^7*c^6*d^3*g^3*i*n/(d*x + c)^3 + 75*B*a^4*b^6*c^2*d^4*g^3*i*n + 380*(b*x
+ a)*B*a^3*b^6*c^3*d^4*g^3*i*n/(d*x + c) + 345*(b*x + a)^2*B*a^2*b^6*c^4*d^
4*g^3*i*n/(d*x + c)^2 + 18*(b*x + a)^3*B*a*b^6*c^5*d^4*g^3*i*n/(d*x + c)^3
- 6*(b*x + a)^4*B*b^6*c^6*d^4*g^3*i*n/(d*x + c)^4 - 30*B*a^5*b^5*c*d^5*g^3*
i*n - 285*(b*x + a)*B*a^4*b^5*c^2*d^5*g^3*i*n/(d*x + c) - 460*(b*x + a)^2*B
*a^3*b^5*c^3*d^5*g^3*i*n/(d*x + c)^2 - 45*(b*x + a)^3*B*a^2*b^5*c^4*d^5*g^3
*i*n/(d*x + c)^3 + 36*(b*x + a)^4*B*a*b^5*c^5*d^5*g^3*i*n/(d*x + c)^4 + 5*B
*a^6*b^4*d^6*g^3*i*n + 114*(b*x + a)*B*a^5*b^4*c*d^6*g^3*i*n/(d*x + c) + 34
5*(b*x + a)^2*B*a^4*b^4*c^2*d^6*g^3*i*n/(d*x + c)^2 + 60*(b*x + a)^3*B*a^3*
b^4*c^3*d^6*g^3*i*n/(d*x + c)^3 - 90*(b*x + a)^4*B*a^2*b^4*c^4*d^6*g^3*i*n/
(d*x + c)^4 - 19*(b*x + a)*B*a^6*b^3*d^7*g^3*i*n/(d*x + c) - 138*(b*x + a)^
2*B*a^5*b^3*c*d^7*g^3*i*n/(d*x + c)^2 - 45*(b*x + a)^3*B*a^4*b^3*c^2*d^7*g^
3*i*n/(d*x + c)^3 + 120*(b*x + a)^4*B*a^3*b^3*c^3*d^7*g^3*i*n/(d*x + c)^4 +
 23*(b*x + a)^2*B*a^6*b^2*d^8*g^3*i*n/(d*x + c)^2 + 18*(b*x + a)^3*B*a^5*b^
```

```
2*c*d^8*g^3*i*n/(d*x + c)^3 - 90*(b*x + a)^4*B*a^4*b^2*c^2*d^8*g^3*i*n/(d*x
 + c)^4 - 3*(b*x + a)^3*B*a^6*b*d^9*g^3*i*n/(d*x + c)^3 + 36*(b*x + a)^4*B*
a^5*b*c*d^9*g^3*i*n/(d*x + c)^4 - 6*(b*x + a)^4*B*a^6*d^10*g^3*i*n/(d*x + c
)^4 + 6*A*b^10*c^6*g^3*i + 6*B*b^10*c^6*g^3*i - 36*A*a*b^9*c^5*d*g^3*i - 36
*B*a*b^9*c^5*d*g^3*i - 30*(b*x + a)*A*b^9*c^6*d*g^3*i/(d*x + c) - 30*(b*x +
 a)*B*b^9*c^6*d*g^3*i/(d*x + c) + 90*A*a^2*b^8*c^4*d^2*g^3*i + 90*B*a^2*b^8
*c^4*d^2*g^3*i + 180*(b*x + a)*A*a*b^8*c^5*d^2*g^3*i/(d*x + c) + 180*(b*x +
 a)*B*a*b^8*c^5*d^2*g^3*i/(d*x + c) + 60*(b*x + a)^2*A*b^8*c^6*d^2*g^3*i/(d
*x + c)^2 + 60*(b*x + a)^2*B*b^8*c^6*d^2*g^3*i/(d*x + c)^2 - 120*A*a^3*b^7*
c^3*d^3*g^3*i - 120*B*a^3*b^7*c^3*d^3*g^3*i - 450*(b*x + a)*A*a^2*b^7*c^4*d
^3*g^3*i/(d*x + c) - 450*(b*x + a)*B*a^2*b^7*c^4*d^3*g^3*i/(d*x + c) - 360*
(b*x + a)^2*A*a*b^7*c^5*d^3*g^3*i/(d*x + c)^2 - 360*(b*x + a)^2*B*a*b^7*c^5
*d^3*g^3*i/(d*x + c)^2 - 60*(b*x + a)^3*A*b^7*c^6*d^3*g^3*i/(d*x + c)^3 - 6
0*(b*x + a)^3*B*b^7*c^6*d^3*g^3*i/(d*x + c)^3 + 90*A*a^4*b^6*c^2*d^4*g^3*i
+ 90*B*a^4*b^6*c^2*d^4*g^3*i + 600*(b*x + a)*A*a^3*b^6*c^3*d^4*g^3*i/(d*x +
 c) + 600*(b*x + a)*B*a^3*b^6*c^3*d^4*g^3*i/(d*x + c) + 900*(b*x + a)^2*A*a
^2*b^6*c^4*d^4*g^3*i/(d*x + c)^2 + 900*(b*x + a)^2*B*a^2*b^6*c^4*d^4*g^3*i/
(d*x + c)^2 + 360*(b*x + a)^3*A*a*b^6*c^5*d^4*g^3*i/(d*x + c)^3 + 360*(b*x
+ a)^3*B*a*b^6*c^5*d^4*g^3*i/(d*x + c)^3 - 36*A*a^5*b^5*c*d^5*g^3*i - 36*B*
a^5*b^5*c*d^5*g^3*i - 450*(b*x + a)*A*a^4*b^5*c^2*d^5*g^3*i/(d*x + c) - 450
*(b*x + a)*B*a^4*b^5*c^2*d^5*g^3*i/(d*x + c) - 1200*(b*x + a)^2*A*a^3*b^5*c
^3*d^5*g^3*i/(d*x + c)^2 - 1200*(b*x + a)^2*B*a^3*b^5*c^3*d^5*g^3*i/(d*x +
c)^2 - 900*(b*x + a)^3*A*a^2*b^5*c^4*d^5*g^3*i/(d*x + c)^3 - 900*(b*x + a)^
3*B*a^2*b^5*c^4*d^5*g^3*i/(d*x + c)^3 + 6*A*a^6*b^4*d^6*g^3*i + 6*B*a^6*b^4
*d^6*g^3*i + 180*(b*x + a)*A*a^5*b^4*c*d^6*g^3*i/(d*x + c) + 180*(b*x + a)*
B*a^5*b^4*c*d^6*g^3*i/(d*x + c) + 900*(b*x + a)^2*A*a^4*b^4*c^2*d^6*g^3*i/(
d*x + c)^2 + 900*(b*x + a)^2*B*a^4*b^4*c^2*d^6*g^3*i/(d*x + c)^2 + 1200*(b*
x + a)^3*A*a^3*b^4*c^3*d^6*g^3*i/(d*x + c)^3 + 1200*(b*x + a)^3*B*a^3*b^4*c
^3*d^6*g^3*i/(d*x + c)^3 - 30*(b*x + a)*A*a^6*b^3*d^7*g^3*i/(d*x + c) - 30*
(b*x + a)*B*a^6*b^3*d^7*g^3*i/(d*x + c) - 360*(b*x + a)^2*A*a^5*b^3*c*d^7*g
^3*i/(d*x + c)^2 - 360*(b*x + a)^2*B*a^5*b^3*c*d^7*g^3*i/(d*x + c)^2 - 900*
(b*x + a)^3*A*a^4*b^3*c^2*d^7*g^3*i/(d*x + c)^3 - 900*(b*x + a)^3*B*a^4*b^3
*c^2*d^7*g^3*i/(d*x + c)^3 + 60*(b*x + a)^2*A*a^6*b^2*d^8*g^3*i/(d*x + c)^2
 + 60*(b*x + a)^2*B*a^6*b^2*d^8*g^3*i/(d*x + c)^2 + 360*(b*x + a)^3*A*a^5*b
^2*c*d^8*g^3*i/(d*x + c)^3 + 360*(b*x + a)^3*B*a^5*b^2*c*d^8*g^3*i/(d*x + c
)^3 - 60*(b*x + a)^3*A*a^6*b*d^9*g^3*i/(d*x + c)^3 - 60*(b*x + a)^3*B*a^6*b
*d^9*g^3*i/(d*x + c)^3)/(b^6*d^4 - 5*(b*x + a)*b^5*d^5/(d*x + c) + 10*(b*x
+ a)^2*b^4*d^6/(d*x + c)^2 - 10*(b*x + a)^3*b^3*d^7/(d*x + c)^3 + 5*(b*x +
a)^4*b^2*d^8/(d*x + c)^4 - (b*x + a)^5*b*d^9/(d*x + c)^5) + 6*(B*b^6*c^6*g^
3*i*n - 6*B*a*b^5*c^5*d*g^3*i*n + 15*B*a^2*b^4*c^4*d^2*g^3*i*n - 20*B*a^3*b
^3*c^3*d^3*g^3*i*n + 15*B*a^4*b^2*c^2*d^4*g^3*i*n - 6*B*a^5*b*c*d^5*g^3*i*n
 + B*a^6*d^6*g^3*i*n)*log(b - (b*x + a)*d/(d*x + c))/(b^2*d^4) - 6*(B*b^6*c
^6*g^3*i*n - 6*B*a*b^5*c^5*d*g^3*i*n + 15*B*a^2*b^4*c^4*d^2*g^3*i*n - 20*B*
a^3*b^3*c^3*d^3*g^3*i*n + 15*B*a^4*b^2*c^2*d^4*g^3*i*n - 6*B*a^5*b*c*d^5*g^
3*i*n + B*a^6*d^6*g^3*i*n)*log((b*x + a)/(d*x + c))/(b^2*d^4))*(b*c/(b*c -
a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{3} \left(dix+ci\right) \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [B] time = 1.51, size = 1118, normalized size = 5.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="maxima")
```

```
[Out] 1/5*B*b^3*d*g^3*i*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/5*A*b^3*d*
g^3*i*x^5 + 1/4*B*b^3*c*g^3*i*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) +
3/4*B*a*b^2*d*g^3*i*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A*b^3*
c*g^3*i*x^4 + 3/4*A*a*b^2*d*g^3*i*x^4 + B*a*b^2*c*g^3*i*x^3*log(e*(b*x/(d*x
 + c) + a/(d*x + c))^n) + B*a^2*b*d*g^3*i*x^3*log(e*(b*x/(d*x + c) + a/(d*x
 + c))^n) + A*a*b^2*c*g^3*i*x^3 + A*a^2*b*d*g^3*i*x^3 + 3/2*B*a^2*b*c*g^3*i
*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*B*a^3*d*g^3*i*x^2*log(e*(
b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*A*a^2*b*c*g^3*i*x^2 + 1/2*A*a^3*d*g^3
*i*x^2 + 1/60*B*b^3*d*g^3*i*n*(12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c
)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3
+ 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) - 1/
24*B*b^3*c*g^3*i*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b
^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^
3*d^3)*x)/(b^3*d^3)) - 1/8*B*a*b^2*d*g^3*i*n*(6*a^4*log(b*x + a)/b^4 - 6*c^
4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*
d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/2*B*a*b^2*c*g^3*i*n*(2*a
^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2
*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 1/2*B*a^2*b*d*g^3*i*n*(2*a^3*log(b*x +
 a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 -
a^2*d^2)*x)/(b^2*d^2)) - 3/2*B*a^2*b*c*g^3*i*n*(a^2*log(b*x + a)/b^2 - c^2*
log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 1/2*B*a^3*d*g^3*i*n*(a^2*log(b*x
+ a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*a^3*c*g^3*i*n*(a
*log(b*x + a)/b - c*log(d*x + c)/d) + B*a^3*c*g^3*i*x*log(e*(b*x/(d*x + c)
+ a/(d*x + c))^n) + A*a^3*c*g^3*i*x
```

mupad [B] time = 5.62, size = 1237, normalized size = 5.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)
```

```
[Out] x*((a*c*(((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d*n - B*
b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d) - (b*g^3*i*(24*A*
a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d - 2*B*a*
b*c*d*n))/(4*d) + A*a*b^2*c*g^3*i))/(b*d) - ((20*a*d + 20*b*c)*(((20*a*d +
20*b*c)*(((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d*n - B*
b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d) - (b*g^3*i*(24*A*
a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d - 2*B*a*
b*c*d*n))/(4*d) + A*a*b^2*c*g^3*i))/(20*b*d) - (a*c*((b^2*g^3*i*(20*A*a*d +
 10*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(b
*d) + (a*g^3*i*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 12*
A*a*b*c*d))/d))/(20*b*d) + (a^2*g^3*i*(2*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d
^2*n - 3*B*b^2*c^2*n + 16*A*a*b*c*d + 2*B*a*b*c*d*n))/(2*b*d)) + x^2*(((20*
a*d + 20*b*c)*(((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d*
n - B*b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(20*b*d) - (b*g^3*i*
(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d -
2*B*a*b*c*d*n))/(4*d) + A*a*b^2*c*g^3*i))/(40*b*d) - (a*c*((b^2*g^3*i*(20*A
*a*d + 10*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/2
0))/(2*b*d) + (a*g^3*i*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2
*n + 12*A*a*b*c*d))/(2*d)) - x^3*(((20*a*d + 20*b*c)*((b^2*g^3*i*(20*A*a*d
+ 10*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/20))/(
60*b*d) - (b*g^3*i*(24*A*a^2*d^2 + 4*A*b^2*c^2 + 3*B*a^2*d^2*n - B*b^2*c^2*
n + 32*A*a*b*c*d - 2*B*a*b*c*d*n))/(12*d) + (A*a*b^2*c*g^3*i)/3) + log(e*((
a + b*x)/(c + d*x))^n)*((B*a^2*g^3*i*x^2*(a*d + 3*b*c))/2 + (B*b^2*g^3*i*x^
```

```
4*(3*a*d + b*c))/4 + B*a^3*c*g^3*i*x + (B*b^3*d*g^3*i*x^5)/5 + B*a*b*g^3*i*
x^3*(a*d + b*c)) + x^4*((b^2*g^3*i*(20*A*a*d + 10*A*b*c + B*a*d*n - B*b*c*n
))/20 - (A*b^2*g^3*i*(20*a*d + 20*b*c))/80) - (log(a + b*x)*(B*a^5*d*g^3*i*
n - 5*B*a^4*b*c*g^3*i*n))/(20*b^2) + (log(c + d*x)*(B*b^3*c^5*g^3*i*n - 10*
B*a^3*c^2*d^3*g^3*i*n - 5*B*a*b^2*c^4*d*g^3*i*n + 10*B*a^2*b*c^3*d^2*g^3*i*
n))/(20*d^4) + (A*b^3*d*g^3*i*x^5)/5
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Timed out
```

3.109 $\int (ag+bgx)^2(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx$

Optimal. Leaf size=190

$$\frac{g^2i(a+bx)^3(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A-Bn\right)}{12b^2}+\frac{g^2i(a+bx)^3(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4b}-\frac{Bg^2in(bc-ad}{12b}$$

```
[Out] 1/12*B*(-a*d+b*c)^3*g^2*i*n*x/b/d^2-1/24*B*(-a*d+b*c)^2*g^2*i*n*(b*x+a)^2/b
^2/d+1/4*g^2*i*(b*x+a)^3*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b+1/12*(-a
*d+b*c)*g^2*i*(b*x+a)^3*(A-B*n+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2-1/12*B*(-a*
d+b*c)^4*g^2*i*n*ln(d*x+c)/b^2/d^3
```

Rubi [A] time = 0.32, antiderivative size = 210, normalized size of antiderivative = 1.11, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.098, Rules used = {2528, 2525, 12, 43}

$$\frac{g^2i(a+bx)^3(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^2}+\frac{dg^2i(a+bx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4b^2}-\frac{Bg^2in(bc-ad)^4\log(c+d}{12b^2d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] (B*(b*c - a*d)^3*g^2*i*n*x)/(12*b*d^2) - (B*(b*c - a*d)^2*g^2*i*n*(a + b*x)
^2)/(24*b^2*d) - (B*(b*c - a*d)*g^2*i*n*(a + b*x)^3)/(12*b^2) + ((b*c - a*d
)*g^2*i*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^2) + (d*g^
2*i*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(4*b^2) - (B*(b*c -
 a*d)^4*g^2*i*n*Log[c + d*x])/(12*b^2*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (109c+109dx)(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx=\int\left(\frac{109(bc-ad)(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{b}\right.$$

$$=\frac{(109(bc-ad))\int(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{b}$$

$$=\frac{109(bc-ad)g^2(a+bx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{3b^2}$$

$$=\frac{109(bc-ad)g^2(a+bx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{3b^2}$$

$$=\frac{109(bc-ad)g^2(a+bx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{3b^2}$$

$$=\frac{109B(bc-ad)^3g^2nx}{12bd^2}-\frac{109B(bc-ad)^2g^2n(a+b}{24b^2d}$$

Mathematica [A] time = 0.18, size = 225, normalized size = 1.18

$$\frac{g^2i\left(6d(a+bx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+8(a+bx)^3(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+\frac{4Bn(bc-ad)^2(2bdx(bc-ad)-}{}\right.}{24b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]),x]
```

```
[Out] (g^2*i*(8*(b*c - a*d)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) +
6*d*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + (4*B*(b*c - a*d)^2
*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]))/
d^3 - (B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b
*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]))/d^3))/(24*b^2)
```

fricas [B] time = 1.10, size = 529, normalized size = 2.78

$$\frac{6\,Ab^4d^4g^2ix^4+2\left(4\,Ba^3bcd^3-Ba^4d^4\right)g^2in\log\left(bx+a\right)-2\left(Bb^4c^4-4\,Bab^3c^3d+6\,Ba^2b^2c^2d^2\right)g^2in\log\left(dx+c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="fricas")
```

```
[Out] 1/24*(6*A*b^4*d^4*g^2*i*x^4 + 2*(4*B*a^3*b*c*d^3 - B*a^4*d^4)*g^2*i*n*log(b
*x + a) - 2*(B*b^4*c^4 - 4*B*a*b^3*c^3*d + 6*B*a^2*b^2*c^2*d^2)*g^2*i*n*log
(d*x + c) - 2*((B*b^4*c*d^3 - B*a*b^3*d^4)*g^2*i*n - 4*(A*b^4*c*d^3 + 2*A*a
*b^3*d^4)*g^2*i)*x^3 - ((B*b^4*c^2*d^2 + 4*B*a*b^3*c*d^3 - 5*B*a^2*b^2*d^4)
*g^2*i*n - 12*(2*A*a*b^3*c*d^3 + A*a^2*b^2*d^4)*g^2*i)*x^2 + 2*(12*A*a^2*b^
2*c*d^3*g^2*i + (B*b^4*c^3*d - 4*B*a*b^3*c^2*d^2 + 2*B*a^2*b^2*c*d^3 + B*a^
```

```
3*b*d^4)*g^2*i*n)*x + 2*(3*B*b^4*d^4*g^2*i*x^4 + 12*B*a^2*b^2*c*d^3*g^2*i*x
 + 4*(B*b^4*c*d^3 + 2*B*a*b^3*d^4)*g^2*i*x^3 + 6*(2*B*a*b^3*c*d^3 + B*a^2*b
^2*d^4)*g^2*i*x^2)*log(e) + 2*(3*B*b^4*d^4*g^2*i*n*x^4 + 12*B*a^2*b^2*c*d^3
*g^2*i*n*x + 4*(B*b^4*c*d^3 + 2*B*a*b^3*d^4)*g^2*i*n*x^3 + 6*(2*B*a*b^3*c*d
^3 + B*a^2*b^2*d^4)*g^2*i*n*x^2)*log((b*x + a)/(d*x + c)))/(b^2*d^3)
```

giac [B] time = 3.60, size = 2535, normalized size = 13.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="giac")
```

```
[Out] 1/24*(2*(B*b^7*c^5*g^2*i*n - 5*B*a*b^6*c^4*d*g^2*i*n - 4*(b*x + a)*B*b^6*c^
5*d*g^2*i*n/(d*x + c) + 10*B*a^2*b^5*c^3*d^2*g^2*i*n + 20*(b*x + a)*B*a*b^5
*c^4*d^2*g^2*i*n/(d*x + c) + 6*(b*x + a)^2*B*b^5*c^5*d^2*g^2*i*n/(d*x + c)^
2 - 10*B*a^3*b^4*c^2*d^3*g^2*i*n - 40*(b*x + a)*B*a^2*b^4*c^3*d^3*g^2*i*n/(
d*x + c) - 30*(b*x + a)^2*B*a*b^4*c^4*d^3*g^2*i*n/(d*x + c)^2 + 5*B*a^4*b^3
*c*d^4*g^2*i*n + 40*(b*x + a)*B*a^3*b^3*c^2*d^4*g^2*i*n/(d*x + c) + 60*(b*x
 + a)^2*B*a^2*b^3*c^3*d^4*g^2*i*n/(d*x + c)^2 - B*a^5*b^2*d^5*g^2*i*n - 20*
(b*x + a)*B*a^4*b^2*c*d^5*g^2*i*n/(d*x + c) - 60*(b*x + a)^2*B*a^3*b^2*c^2*
d^5*g^2*i*n/(d*x + c)^2 + 4*(b*x + a)*B*a^5*b*d^6*g^2*i*n/(d*x + c) + 30*(b
*x + a)^2*B*a^4*b*c*d^6*g^2*i*n/(d*x + c)^2 - 6*(b*x + a)^2*B*a^5*d^7*g^2*i
*n/(d*x + c)^2)*log((b*x + a)/(d*x + c))/(b^4*d^3 - 4*(b*x + a)*b^3*d^4/(d*
x + c) + 6*(b*x + a)^2*b^2*d^5/(d*x + c)^2 - 4*(b*x + a)^3*b*d^6/(d*x + c)^
3 + (b*x + a)^4*d^7/(d*x + c)^4) + (B*b^8*c^5*g^2*i*n - 5*B*a*b^7*c^4*d*g^2
*i*n - 2*(b*x + a)*B*b^7*c^5*d*g^2*i*n/(d*x + c) + 10*B*a^2*b^6*c^3*d^2*g^2
*i*n + 10*(b*x + a)*B*a*b^6*c^4*d^2*g^2*i*n/(d*x + c) - (b*x + a)^2*B*b^6*c
^5*d^2*g^2*i*n/(d*x + c)^2 - 10*B*a^3*b^5*c^2*d^3*g^2*i*n - 20*(b*x + a)*B*
a^2*b^5*c^3*d^3*g^2*i*n/(d*x + c) + 5*(b*x + a)^2*B*a*b^5*c^4*d^3*g^2*i*n/(
d*x + c)^2 + 2*(b*x + a)^3*B*b^5*c^5*d^3*g^2*i*n/(d*x + c)^3 + 5*B*a^4*b^4*
c*d^4*g^2*i*n + 20*(b*x + a)*B*a^3*b^4*c^2*d^4*g^2*i*n/(d*x + c) - 10*(b*x
+ a)^2*B*a^2*b^4*c^3*d^4*g^2*i*n/(d*x + c)^2 - 10*(b*x + a)^3*B*a*b^4*c^4*d
^4*g^2*i*n/(d*x + c)^3 - B*a^5*b^3*d^5*g^2*i*n - 10*(b*x + a)*B*a^4*b^3*c*d
^5*g^2*i*n/(d*x + c) + 10*(b*x + a)^2*B*a^3*b^3*c^2*d^5*g^2*i*n/(d*x + c)^2
 + 20*(b*x + a)^3*B*a^2*b^3*c^3*d^5*g^2*i*n/(d*x + c)^3 + 2*(b*x + a)*B*a^5
*b^2*d^6*g^2*i*n/(d*x + c) - 5*(b*x + a)^2*B*a^4*b^2*c*d^6*g^2*i*n/(d*x + c
)^2 - 20*(b*x + a)^3*B*a^3*b^2*c^2*d^6*g^2*i*n/(d*x + c)^3 + (b*x + a)^2*B*
a^5*b*d^7*g^2*i*n/(d*x + c)^2 + 10*(b*x + a)^3*B*a^4*b*c*d^7*g^2*i*n/(d*x +
 c)^3 - 2*(b*x + a)^3*B*a^5*d^8*g^2*i*n/(d*x + c)^3 + 2*A*b^8*c^5*g^2*i + 2
*B*b^8*c^5*g^2*i - 10*A*a*b^7*c^4*d*g^2*i - 10*B*a*b^7*c^4*d*g^2*i - 8*(b*x
 + a)*A*b^7*c^5*d*g^2*i/(d*x + c) - 8*(b*x + a)*B*b^7*c^5*d*g^2*i/(d*x + c)
 + 20*A*a^2*b^6*c^3*d^2*g^2*i + 20*B*a^2*b^6*c^3*d^2*g^2*i + 40*(b*x + a)*A
*a*b^6*c^4*d^2*g^2*i/(d*x + c) + 40*(b*x + a)*B*a*b^6*c^4*d^2*g^2*i/(d*x +
c) + 12*(b*x + a)^2*A*b^6*c^5*d^2*g^2*i/(d*x + c)^2 + 12*(b*x + a)^2*B*b^6*
c^5*d^2*g^2*i/(d*x + c)^2 - 20*A*a^3*b^5*c^2*d^3*g^2*i - 20*B*a^3*b^5*c^2*d
^3*g^2*i - 80*(b*x + a)*A*a^2*b^5*c^3*d^3*g^2*i/(d*x + c) - 80*(b*x + a)*B*
a^2*b^5*c^3*d^3*g^2*i/(d*x + c) - 60*(b*x + a)^2*A*a*b^5*c^4*d^3*g^2*i/(d*x
 + c)^2 - 60*(b*x + a)^2*B*a*b^5*c^4*d^3*g^2*i/(d*x + c)^2 + 10*A*a^4*b^4*c
*d^4*g^2*i + 10*B*a^4*b^4*c*d^4*g^2*i + 80*(b*x + a)*A*a^3*b^4*c^2*d^4*g^2*
i/(d*x + c) + 80*(b*x + a)*B*a^3*b^4*c^2*d^4*g^2*i/(d*x + c) + 120*(b*x + a
)^2*A*a^2*b^4*c^3*d^4*g^2*i/(d*x + c)^2 + 120*(b*x + a)^2*B*a^2*b^4*c^3*d^4
*g^2*i/(d*x + c)^2 - 2*A*a^5*b^3*d^5*g^2*i - 2*B*a^5*b^3*d^5*g^2*i - 40*(b*
x + a)*A*a^4*b^3*c*d^5*g^2*i/(d*x + c) - 40*(b*x + a)*B*a^4*b^3*c*d^5*g^2*i
/(d*x + c) - 120*(b*x + a)^2*A*a^3*b^3*c^2*d^5*g^2*i/(d*x + c)^2 - 120*(b*x
 + a)^2*B*a^3*b^3*c^2*d^5*g^2*i/(d*x + c)^2 + 8*(b*x + a)*A*a^5*b^2*d^6*g^2
*i/(d*x + c) + 8*(b*x + a)*B*a^5*b^2*d^6*g^2*i/(d*x + c) + 60*(b*x + a)^2*A
*a^4*b^2*c*d^6*g^2*i/(d*x + c)^2 + 60*(b*x + a)^2*B*a^4*b^2*c*d^6*g^2*i/(d*
x + c)^2 - 12*(b*x + a)^2*A*a^5*b*d^7*g^2*i/(d*x + c)^2 - 12*(b*x + a)^2*B*
```

```
a^5*b*d^7*g^2*i/(d*x + c)^2)/(b^5*d^3 - 4*(b*x + a)*b^4*d^4/(d*x + c) + 6*(
b*x + a)^2*b^3*d^5/(d*x + c)^2 - 4*(b*x + a)^3*b^2*d^6/(d*x + c)^3 + (b*x +
 a)^4*b*d^7/(d*x + c)^4) + 2*(B*b^5*c^5*g^2*i*n - 5*B*a*b^4*c^4*d*g^2*i*n +
 10*B*a^2*b^3*c^3*d^2*g^2*i*n - 10*B*a^3*b^2*c^2*d^3*g^2*i*n + 5*B*a^4*b*c*
d^4*g^2*i*n - B*a^5*d^5*g^2*i*n)*log(-b + (b*x + a)*d/(d*x + c))/(b^2*d^3)
- 2*(B*b^5*c^5*g^2*i*n - 5*B*a*b^4*c^4*d*g^2*i*n + 10*B*a^2*b^3*c^3*d^2*g^2
*i*n - 10*B*a^3*b^2*c^2*d^3*g^2*i*n + 5*B*a^4*b*c*d^4*g^2*i*n - B*a^5*d^5*g
^2*i*n)*log((b*x + a)/(d*x + c))/(b^2*d^3))*(b*c/(b*c - a*d)^2 - a*d/(b*c -
 a*d)^2)
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{2} (dix+ci) \left(B\ln \left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [B] time = 1.38, size = 740, normalized size = 3.89

$$\frac{1}{4}Bb^2dg^2ix^4\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^n\right)+\frac{1}{4}Ab^2dg^2ix^4+\frac{1}{3}Bb^2cg^2ix^3\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^n\right)+\frac{2}{3}Babdg^2ix^3\,\mathrm{l}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="maxima")
```

```
[Out] 1/4*B*b^2*d*g^2*i*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A*b^2*d*
g^2*i*x^4 + 1/3*B*b^2*c*g^2*i*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) +
2/3*B*a*b*d*g^2*i*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*A*b^2*c*
g^2*i*x^3 + 2/3*A*a*b*d*g^2*i*x^3 + B*a*b*c*g^2*i*x^2*log(e*(b*x/(d*x + c)
+ a/(d*x + c))^n) + 1/2*B*a^2*d*g^2*i*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c
))^n) + A*a*b*c*g^2*i*x^2 + 1/2*A*a^2*d*g^2*i*x^2 - 1/24*B*b^2*d*g^2*i*n*(6
*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)
*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))
+ 1/6*B*b^2*c*g^2*i*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((
b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 1/3*B*a*b*d*
g^2*i*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*
d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - B*a*b*c*g^2*i*n*(a^2*log(b
*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 1/2*B*a^2*d*g^2
*i*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) +
B*a^2*c*g^2*i*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + B*a^2*c*g^2*i*x*log
(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*a^2*c*g^2*i*x
```

mupad [B] time = 5.02, size = 663, normalized size = 3.49

$$\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\,\left(B\,a^2\,c\,g^2\,i\,x+\frac{B\,a\,g^2\,i\,x^2\,\left(a\,d+2\,b\,c\right)}{2}+\frac{B\,b\,g^2\,i\,x^3\,\left(2\,a\,d+b\,c\right)}{3}+\frac{B\,b^2\,d\,g^2\,i\,x^4}{4}\right)+x^3\,\left(\frac{b\,g^2\,i\,(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)
```

```
[Out] log(e*((a + b*x)/(c + d*x))^n)*(B*a^2*c*g^2*i*x + (B*a*g^2*i*x^2*(a*d + 2*b
*c))/2 + (B*b*g^2*i*x^3*(2*a*d + b*c))/3 + (B*b^2*d*g^2*i*x^4)/4) + x^3*((b
*g^2*i*(12*A*a*d + 8*A*b*c + B*a*d*n - B*b*c*n))/12 - (A*b*g^2*i*(12*a*d +
12*b*c))/36) + x*(((12*a*d + 12*b*c)*(((12*a*d + 12*b*c)*((b*g^2*i*(12*A*a*
d + 8*A*b*c + B*a*d*n - B*b*c*n))/4 - (A*b*g^2*i*(12*a*d + 12*b*c))/12))/(1
2*b*d) - (g^2*i*(9*A*a^2*d^2 + 3*A*b^2*c^2 + 2*B*a^2*d^2*n - B*b^2*c^2*n +
18*A*a*b*c*d - B*a*b*c*d*n))/(3*d) + A*a*b*c*g^2*i))/(12*b*d) - (a*c*((b*g^
2*i*(12*A*a*d + 8*A*b*c + B*a*d*n - B*b*c*n))/4 - (A*b*g^2*i*(12*a*d + 12*b
*c))/12))/(b*d) + (a*g^2*i*(2*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2*n - 2*B*b
^2*c^2*n + 12*A*a*b*c*d + B*a*b*c*d*n))/(2*b*d)) - x^2*(((12*a*d + 12*b*c)*
((b*g^2*i*(12*A*a*d + 8*A*b*c + B*a*d*n - B*b*c*n))/4 - (A*b*g^2*i*(12*a*d
+ 12*b*c))/12))/(24*b*d) - (g^2*i*(9*A*a^2*d^2 + 3*A*b^2*c^2 + 2*B*a^2*d^2*
n - B*b^2*c^2*n + 18*A*a*b*c*d - B*a*b*c*d*n))/(6*d) + (A*a*b*c*g^2*i)/2) -
 (log(a + b*x)*(B*a^4*d*g^2*i*n - 4*B*a^3*b*c*g^2*i*n))/(12*b^2) - (log(c +
 d*x)*(B*b^2*c^4*g^2*i*n + 6*B*a^2*c^2*d^2*g^2*i*n - 4*B*a*b*c^3*d*g^2*i*n)
)/(12*d^3) + (A*b^2*d*g^2*i*x^4)/4
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Timed out
```

3.110 $\int (ag+bgx)(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx$

Optimal. Leaf size=149

$$\frac{gi(a+bx)^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A-Bn\right)}{6b^2}+\frac{gi(a+bx)^2(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b}+\frac{Bgin(bc-ad}{6b}$$

```
[Out] -1/6*B*(-a*d+b*c)^2*g*i*n*x/b/d+1/3*g*i*(b*x+a)^2*(d*x+c)*(A+B*ln(e*((b*x+a
)/(d*x+c))^n))/b+1/6*(-a*d+b*c)*g*i*(b*x+a)^2*(A-B*n+B*ln(e*((b*x+a)/(d*x+c
))^n))/b^2+1/6*B*(-a*d+b*c)^3*g*i*n*ln(d*x+c)/b^2/d^2
```

Rubi [B] time = 0.37, antiderivative size = 311, normalized size of antiderivative = 2.09, number of steps used = 13, number of rules used = 6, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {2528, 2486, 31, 2525, 12, 72}

$$-\frac{1}{3}bBdginx\left(\frac{a^2}{b^2}-\frac{c^2}{d^2}\right)-\frac{a^2Bgin(ad+bc)\log(a+bx)}{2b^2}+\frac{a^3Bdgin\log(a+bx)}{3b^2}+\frac{1}{3}bdgix^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right.$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] a*A*c*g*i*x - (b*B*(a^2/b^2 - c^2/d^2)*d*g*i*n*x)/3 - (B*(b*c - a*d)*(b*c +
 a*d)*g*i*n*x)/(2*b*d) - (B*(b*c - a*d)*g*i*n*x^2)/6 + (a^3*B*d*g*i*n*Log[a
 + b*x])/(3*b^2) - (a^2*B*(b*c + a*d)*g*i*n*Log[a + b*x])/(2*b^2) + (a*B*c*
g*i*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/b + ((b*c + a*d)*g*i*x^2*(A +
 B*Log[e*((a + b*x)/(c + d*x))^n]))/2 + (b*d*g*i*x^3*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]))/3 - (b*B*c^3*g*i*n*Log[c + d*x])/(3*d^2) - (a*B*c*(b*c -
a*d)*g*i*n*Log[c + d*x])/(b*d) + (B*c^2*(b*c + a*d)*g*i*n*Log[c + d*x])/(2*
d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (110c+110dx)(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx = \int \left(110acg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)+110(bc+ad\right.$$

$$= (110acg)\int \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx + (110bdg$$

$$= 110aAcgx + 55(bc+ad)gx^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.$$

$$= 110aAcgx + \frac{110aBcg(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b} + 55($$

$$= 110aAcgx + \frac{110aBcg(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b} + 55($$

$$= 110aAcgx - \frac{55B(bc-ad)(bc+ad)gnx}{3bd} - \frac{55}{3}B(bc-$$

Mathematica [A] time = 0.28, size = 189, normalized size = 1.27

$$\frac{gi\left(b\left(dx\left(a^2Bd^2n+abd(6Ac+3Adx+Bdnx)+Ab^2dx(3c+2dx)+b^2(-B)cn(c+dx)\right)+Bcn\left(6a^2d^2-3abcd+b\right.\right.\right.}{6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
),x]
```

```
[Out] (g*i*(-(a^2*B*d^2*(3*b*c + a*d)*n*Log[a + b*x]) + b*(d*x*(a^2*B*d^2*n - b^2
*B*c*n*(c + d*x) + A*b^2*d*x*(3*c + 2*d*x) + a*b*d*(6*A*c + 3*A*d*x + B*d*n
*x)) + B*d^2*(6*a^2*c + 3*a*b*x*(2*c + d*x) + b^2*x^2*(3*c + 2*d*x))*Log[e*
((a + b*x)/(c + d*x))^n] + B*c*(b^2*c^2 - 3*a*b*c*d + 6*a^2*d^2)*n*Log[c +
d*x])))/(6*b^2*d^2)
```

fricas [B] time = 0.97, size = 309, normalized size = 2.07

$$\frac{2\,Ab^3d^3gix^3+\left(3\,Ba^2bcd^2-Ba^3d^3\right)gin\log\left(bx+a\right)+\left(Bb^3c^3-3\,Bab^2c^2d\right)gin\log\left(dx+c\right)-\left(\left(Bb^3cd^2-Bab^2d^3\right)g\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algor
ithm="fricas")
```

```
[Out] 1/6*(2*A*b^3*d^3*g*i*x^3 + (3*B*a^2*b*c*d^2 - B*a^3*d^3)*g*i*n*log(b*x + a)
 + (B*b^3*c^3 - 3*B*a*b^2*c^2*d)*g*i*n*log(d*x + c) - ((B*b^3*c*d^2 - B*a*b
^2*d^3)*g*i*n - 3*(A*b^3*c*d^2 + A*a*b^2*d^3)*g*i)*x^2 + (6*A*a*b^2*c*d^2*g
*i - (B*b^3*c^2*d - B*a^2*b*d^3)*g*i*n)*x + (2*B*b^3*d^3*g*i*x^3 + 6*B*a*b^
2*c*d^2*g*i*x + 3*(B*b^3*c*d^2 + B*a*b^2*d^3)*g*i*x^2)*log(e) + (2*B*b^3*d^
3*g*i*n*x^3 + 6*B*a*b^2*c*d^2*g*i*n*x + 3*(B*b^3*c*d^2 + B*a*b^2*d^3)*g*i*n
*x^2)*log((b*x + a)/(d*x + c)))/(b^2*d^2)
```

giac [B] time = 1.95, size = 1256, normalized size = 8.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algor
ithm="giac")
```

```
[Out] -1/6*((B*b^5*c^4*g*i*n - 4*B*a*b^4*c^3*d*g*i*n - 3*(b*x + a)*B*b^4*c^4*d*g*
i*n/(d*x + c) + 6*B*a^2*b^3*c^2*d^2*g*i*n + 12*(b*x + a)*B*a*b^3*c^3*d^2*g*
i*n/(d*x + c) - 4*B*a^3*b^2*c*d^3*g*i*n - 18*(b*x + a)*B*a^2*b^2*c^2*d^3*g*
i*n/(d*x + c) + B*a^4*b*d^4*g*i*n + 12*(b*x + a)*B*a^3*b*c*d^4*g*i*n/(d*x +
 c) - 3*(b*x + a)*B*a^4*d^5*g*i*n/(d*x + c))*log((b*x + a)/(d*x + c))/(b^3*
d^2 - 3*(b*x + a)*b^2*d^3/(d*x + c) + 3*(b*x + a)^2*b*d^4/(d*x + c)^2 - (b*
x + a)^3*d^5/(d*x + c)^3) + ((b*x + a)*B*b^5*c^4*d*g*i*n/(d*x + c) - 4*(b*x
 + a)*B*a*b^4*c^3*d^2*g*i*n/(d*x + c) - (b*x + a)^2*B*b^4*c^4*d^2*g*i*n/(d*
x + c)^2 + 6*(b*x + a)*B*a^2*b^3*c^2*d^3*g*i*n/(d*x + c) + 4*(b*x + a)^2*B*
a*b^3*c^3*d^3*g*i*n/(d*x + c)^2 - 4*(b*x + a)*B*a^3*b^2*c*d^4*g*i*n/(d*x +
c) - 6*(b*x + a)^2*B*a^2*b^2*c^2*d^4*g*i*n/(d*x + c)^2 + (b*x + a)*B*a^4*b*
d^5*g*i*n/(d*x + c) + 4*(b*x + a)^2*B*a^3*b*c*d^5*g*i*n/(d*x + c)^2 - (b*x
+ a)^2*B*a^4*d^6*g*i*n/(d*x + c)^2 + A*b^6*c^4*g*i + B*b^6*c^4*g*i - 4*A*a*
b^5*c^3*d*g*i - 4*B*a*b^5*c^3*d*g*i - 3*(b*x + a)*A*b^5*c^4*d*g*i/(d*x + c)
 - 3*(b*x + a)*B*b^5*c^4*d*g*i/(d*x + c) + 6*A*a^2*b^4*c^2*d^2*g*i + 6*B*a^
2*b^4*c^2*d^2*g*i + 12*(b*x + a)*A*a*b^4*c^3*d^2*g*i/(d*x + c) + 12*(b*x +
a)*B*a*b^4*c^3*d^2*g*i/(d*x + c) - 4*A*a^3*b^3*c*d^3*g*i - 4*B*a^3*b^3*c*d^
3*g*i - 18*(b*x + a)*A*a^2*b^3*c^2*d^3*g*i/(d*x + c) - 18*(b*x + a)*B*a^2*b
^3*c^2*d^3*g*i/(d*x + c) + A*a^4*b^2*d^4*g*i + B*a^4*b^2*d^4*g*i + 12*(b*x
+ a)*A*a^3*b^2*c*d^4*g*i/(d*x + c) + 12*(b*x + a)*B*a^3*b^2*c*d^4*g*i/(d*x
+ c) - 3*(b*x + a)*A*a^4*b*d^5*g*i/(d*x + c) - 3*(b*x + a)*B*a^4*b*d^5*g*i/
(d*x + c))/(b^4*d^2 - 3*(b*x + a)*b^3*d^3/(d*x + c) + 3*(b*x + a)^2*b^2*d^4
/(d*x + c)^2 - (b*x + a)^3*b*d^5/(d*x + c)^3) + (B*b^4*c^4*g*i*n - 4*B*a*b^
3*c^3*d*g*i*n + 6*B*a^2*b^2*c^2*d^2*g*i*n - 4*B*a^3*b*c*d^3*g*i*n + B*a^4*d
^4*g*i*n)*log(b - (b*x + a)*d/(d*x + c))/(b^2*d^2) - (B*b^4*c^4*g*i*n - 4*B
*a*b^3*c^3*d*g*i*n + 6*B*a^2*b^2*c^2*d^2*g*i*n - 4*B*a^3*b*c*d^3*g*i*n + B*
a^4*d^4*g*i*n)*log((b*x + a)/(d*x + c))/(b^2*d^2))*(b*c/(b*c - a*d)^2 - a*d
/(b*c - a*d)^2)
```

maple [F] time = 0.13, size = 0, normalized size = 0.00

$$\int (bgx+ag)(dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [B] time = 1.21, size = 393, normalized size = 2.64

$$\frac{1}{3}Bbdgix^3\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^n\right)+\frac{1}{3}Abdgix^3+\frac{1}{2}Bbcgix^2\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^n\right)+\frac{1}{2}Badgix^2\log\left(e\left(\frac{}{d}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algor
ithm="maxima")
```

```
[Out] 1/3*B*b*d*g*i*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*A*b*d*g*i*x^
3 + 1/2*B*b*c*g*i*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*B*a*d*g*
i*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*A*b*c*g*i*x^2 + 1/2*A*a*
d*g*i*x^2 + 1/6*B*b*d*g*i*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^
3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 1/2*B*
b*c*g*i*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d
)) - 1/2*B*a*d*g*i*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c -
a*d)*x/(b*d)) + B*a*c*g*i*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + B*a*c*g
*i*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*a*c*g*i*x
```

mupad [B] time = 4.84, size = 295, normalized size = 1.98

$$\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\left(\frac{B\,b\,d\,g\,i\,x^3}{3}+\frac{B\,g\,i\,\left(a\,d+b\,c\right)\,x^2}{2}+B\,a\,c\,g\,i\,x\right)-x\left(\frac{\left(\frac{g\,i\,\left(6\,A\,a\,d+6\,A\,b\,c+B\,a\,d\,n-B\,b\,c\,n\right)}{3}-\frac{A\,g\,i\,\left(6\,a\,d+6\,b\,c\right)}{6}\right)}{6\,b\,d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)
```

```
[Out] log(e*((a + b*x)/(c + d*x))^n)*((B*g*i*x^2*(a*d + b*c))/2 + (B*b*d*g*i*x^3)
/3 + B*a*c*g*i*x) - x*((((g*i*(6*A*a*d + 6*A*b*c + B*a*d*n - B*b*c*n))/3 -
(A*g*i*(6*a*d + 6*b*c))/6)*(6*a*d + 6*b*c))/(6*b*d) + A*a*c*g*i - (g*i*(2*A
*a^2*d^2 + 2*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 8*A*a*b*c*d))/(2*b*d))
 + x^2*((g*i*(6*A*a*d + 6*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*g*i*(6*a*d + 6
*b*c))/12) - (log(a + b*x)*(B*a^3*d*g*i*n - 3*B*a^2*b*c*g*i*n))/(6*b^2) + (
log(c + d*x)*(B*b*c^3*g*i*n - 3*B*a*c^2*d*g*i*n))/(6*d^2) + (A*b*d*g*i*x^3)
/3
```

sympy [A] time = 60.84, size = 756, normalized size = 5.07

$$\begin{cases} acgix\left(A+B\log\left(e\left(\frac{a}{c}\right)^n\right)\right) \\ ag\left(Acix+\frac{Adix^2}{2}-\frac{Bc^2in\log\left(c+dx\right)}{2d}+Bcinx\log\left(a\right)-Bcinx\log\left(c+dx\right)+\frac{Bcinx}{2}+Bcix\log\left(e\right)+\frac{Bdinx^2\log\left(a\right)}{2}-\frac{Bdinx}{}\right. \\ ci\left(Aagx+\frac{Abgx^2}{2}+\frac{Ba^2gn\log\left(\frac{a}{c}+\frac{bx}{c}\right)}{2b}+Bagnx\log\left(\frac{a}{c}+\frac{bx}{c}\right)-\frac{Bagnx}{2}+Bagx\log\left(e\right)+\frac{Bbgnx^2\log\left(\frac{a}{c}+\frac{bx}{c}\right)}{2}-\frac{Bbgnx^2}{4}+Bbg\right. \\ Aacgix+\frac{Aadgix^2}{2}+\frac{Abcgix^2}{2}+\frac{Abdgix^3}{3}-\frac{Ba^3dgin\log\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)}{6b^2}-\frac{Ba^3dgin\log\left(\frac{c}{d}+x\right)}{6b^2}+\frac{Ba^2cgin\log\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)}{2b}+\frac{Ba^2cgin\log\left(\frac{c}{d}\right.}{2b} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Piecewise((a*c*g*i*x*(A + B*log(e*(a/c)**n)), Eq(b, 0) & Eq(d, 0)), (a*g*(A
*c*i*x + A*d*i*x**2/2 - B*c**2*i*n*log(c + d*x)/(2*d) + B*c*i*n*x*log(a) -
B*c*i*n*x*log(c + d*x) + B*c*i*n*x/2 + B*c*i*x*log(e) + B*d*i*n*x**2*log(a)
/2 - B*d*i*n*x**2*log(c + d*x)/2 + B*d*i*n*x**2/4 + B*d*i*x**2*log(e)/2), E
q(b, 0)), (c*i*(A*a*g*x + A*b*g*x**2/2 + B*a**2*g*n*log(a/c + b*x/c)/(2*b)
+ B*a*g*n*x*log(a/c + b*x/c) - B*a*g*n*x/2 + B*a*g*x*log(e) + B*b*g*n*x**2*
log(a/c + b*x/c)/2 - B*b*g*n*x**2/4 + B*b*g*x**2*log(e)/2), Eq(d, 0)), (A*a
*c*g*i*x + A*a*d*g*i*x**2/2 + A*b*c*g*i*x**2/2 + A*b*d*g*i*x**3/3 - B*a**3*
d*g*i*n*log(a/(c + d*x) + b*x/(c + d*x))/(6*b**2) - B*a**3*d*g*i*n*log(c/d
```

```
+ x)/(6*b**2) + B*a**2*c*g*i*n*log(a/(c + d*x) + b*x/(c + d*x))/(2*b) + B*a
**2*c*g*i*n*log(c/d + x)/(2*b) + B*a**2*d*g*i*n*x/(6*b) - B*a*c**2*g*i*n*lo
g(c/d + x)/(2*d) + B*a*c*g*i*n*x*log(a/(c + d*x) + b*x/(c + d*x)) + B*a*c*g
*i*x*log(e) + B*a*d*g*i*n*x**2*log(a/(c + d*x) + b*x/(c + d*x))/2 + B*a*d*g
*i*n*x**2/6 + B*a*d*g*i*x**2*log(e)/2 + B*b*c**3*g*i*n*log(c/d + x)/(6*d**2
) - B*b*c**2*g*i*n*x/(6*d) + B*b*c*g*i*n*x**2*log(a/(c + d*x) + b*x/(c + d*
x))/2 - B*b*c*g*i*n*x**2/6 + B*b*c*g*i*x**2*log(e)/2 + B*b*d*g*i*n*x**3*log
(a/(c + d*x) + b*x/(c + d*x))/3 + B*b*d*g*i*x**3*log(e)/3, True))
```

3.111 $\int (ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx$

Optimal. Leaf size=86

$$\frac{i(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2d}-\frac{Bin(bc-ad)^2\log(a+bx)}{2b^2d}-\frac{Binx(bc-ad)}{2b}$$

```
[Out] -1/2*B*(-a*d+b*c)*i*n*x/b-1/2*B*(-a*d+b*c)^2*i*n*ln(b*x+a)/b^2/d+1/2*i*(d*x
+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d
```

Rubi [A] time = 0.06, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {2525, 12, 43}

$$\frac{i(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2d}-\frac{Bin(bc-ad)^2\log(a+bx)}{2b^2d}-\frac{Binx(bc-ad)}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] -(B*(b*c - a*d)*i*n*x)/(2*b) - (B*(b*c - a*d)^2*i*n*Log[a + b*x])/(2*b^2*d)
 + (i*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\int (111c+111dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx = \frac{111(c+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{2d} - \frac{(Bn)\int \frac{12321(bc-ad)(c\cdots}{a+bx}}{222d}$$

$$= \frac{111(c+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{2d} - \frac{(111B(bc-ad)n)\int}{2d}$$

$$= \frac{111(c+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{2d} - \frac{(111B(bc-ad)n)\int}{2d}$$

$$= -\frac{111B(bc-ad)nx}{2b} - \frac{111B(bc-ad)^2n\log(a+bx)}{2b^2d} + \frac{111(c+}{}$$

Mathematica [A] time = 0.04, size = 74, normalized size = 0.86

$$\frac{i\left((c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-\frac{Bn(bc-ad)((bc-ad)\log(a+bx)+bdx)}{b^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] (i*(-((B*(b*c - a*d)*n*(b*d*x + (b*c - a*d)*Log[a + b*x]))/b^2) + (c + d*x)
^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])))/(2*d)
```

fricas [B] time = 0.82, size = 162, normalized size = 1.88

$$\frac{Ab^2d^2ix^2 - Bb^2c^2in\log(dx+c) + \left(2\,Babcd - Ba^2d^2\right)in\log(bx+a) + \left(2\,Ab^2cdi - \left(Bb^2cd - Babd^2\right)in\right)x + \left(Bb\cdots\right.}{2\,b^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fricas
")
```

```
[Out] 1/2*(A*b^2*d^2*i*x^2 - B*b^2*c^2*i*n*log(d*x + c) + (2*B*a*b*c*d - B*a^2*d^
2)*i*n*log(b*x + a) + (2*A*b^2*c*d*i - (B*b^2*c*d - B*a*b*d^2)*i*n)*x + (B*
b^2*d^2*i*x^2 + 2*B*b^2*c*d*i*x)*log(e) + (B*b^2*d^2*i*n*x^2 + 2*B*b^2*c*d*
i*n*x)*log((b*x + a)/(d*x + c)))/(b^2*d)
```

giac [B] time = 0.78, size = 572, normalized size = 6.65

$$\frac{1}{2}\left(\frac{\left(Bb^3c^3in - 3\,Bab^2c^2din + 3\,Ba^2bcd^2in - Ba^3d^3in\right)\log\left(\frac{bx+a}{dx+c}\right)}{b^2d - \frac{2\,(bx+a)bd^2}{dx+c} + \frac{(bx+a)^2d^3}{(dx+c)^2}} - \frac{Bb^4c^3in - 3\,Bab^3c^2din - \frac{(bx+a)Bb^3c^3din}{dx+c} + 3\,B\cdots}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac")
```

```
[Out] 1/2*((B*b^3*c^3*i*n - 3*B*a*b^2*c^2*d*i*n + 3*B*a^2*b*c*d^2*i*n - B*a^3*d^3
*i*n)*log((b*x + a)/(d*x + c))/(b^2*d - 2*(b*x + a)*b*d^2/(d*x + c) + (b*x
+ a)^2*d^3/(d*x + c)^2) - (B*b^4*c^3*i*n - 3*B*a*b^3*c^2*d*i*n - (b*x + a)*
B*b^3*c^3*d*i*n/(d*x + c) + 3*B*a^2*b^2*c*d^2*i*n + 3*(b*x + a)*B*a*b^2*c^2
*d^2*i*n/(d*x + c) - B*a^3*b*d^3*i*n - 3*(b*x + a)*B*a^2*b*c*d^3*i*n/(d*x +
```

```
c) + (b*x + a)*B*a^3*d^4*i*n/(d*x + c) - A*b^4*c^3*i - B*b^4*c^3*i + 3*A*a
*b^3*c^2*d*i + 3*B*a*b^3*c^2*d*i - 3*A*a^2*b^2*c*d^2*i - 3*B*a^2*b^2*c*d^2*
i + A*a^3*b*d^3*i + B*a^3*b*d^3*i)/(b^3*d - 2*(b*x + a)*b^2*d^2/(d*x + c) +
 (b*x + a)^2*b*d^3/(d*x + c)^2) + (B*b^3*c^3*i*n - 3*B*a*b^2*c^2*d*i*n + 3*
B*a^2*b*c*d^2*i*n - B*a^3*d^3*i*n)*log(-b + (b*x + a)*d/(d*x + c))/(b^2*d)
- (B*b^3*c^3*i*n - 3*B*a*b^2*c^2*d*i*n + 3*B*a^2*b*c*d^2*i*n - B*a^3*d^3*i*
n)*log((b*x + a)/(d*x + c))/(b^2*d))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2
)
```

maple [F] time = 0.18, size = 0, normalized size = 0.00

$$\int (dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [A] time = 1.20, size = 156, normalized size = 1.81

$$\frac{1}{2}Bdix^2\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^{n}\right)+\frac{1}{2}Adix^2-\frac{1}{2}Bdin\left(\frac{a^2\log(bx+a)}{b^2}-\frac{c^2\log(dx+c)}{d^2}+\frac{(bc-ad)x}{bd}\right)+Bcin\left(\frac{a\log}{\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxima
")
```

```
[Out] 1/2*B*d*i*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*A*d*i*x^2 - 1/2*
B*d*i*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d))
 + B*c*i*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + B*c*i*x*log(e*(b*x/(d*x
+ c) + a/(d*x + c))^n) + A*c*i*x
```

mupad [B] time = 4.34, size = 134, normalized size = 1.56

$$x\left(\frac{i\,(2\,A\,a\,d+4\,A\,b\,c+B\,a\,d\,n-B\,b\,c\,n)}{2\,b}-\frac{A\,i\,(2\,a\,d+2\,b\,c)}{2\,b}\right)+\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^{n}\right)\left(\frac{B\,d\,i\,x^2}{2}+B\,c\,i\,x\right)-\frac{\ln(a+b\,x)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)
```

```
[Out] x*((i*(2*A*a*d + 4*A*b*c + B*a*d*n - B*b*c*n))/(2*b) - (A*i*(2*a*d + 2*b*c)
)/(2*b)) + log(e*((a + b*x)/(c + d*x))^n)*((B*d*i*x^2)/2 + B*c*i*x) - (log(
a + b*x)*(B*a^2*d*i*n - 2*B*a*b*c*i*n))/(2*b^2) + (A*d*i*x^2)/2 - (B*c^2*i*
n*log(c + d*x))/(2*d)
```

sympy [A] time = 39.91, size = 444, normalized size = 5.16

$$\begin{cases} cix\left(A+B\log\left(e\left(\frac{a}{c}\right)^{n}\right)\right) \\ Acix+\frac{Adix^2}{2}-\frac{Bc^2in\log(c+dx)}{2d}+Bcinx\log(a)-Bcinx\log(c+dx)+\frac{Bcinx}{2}+Bcix\log(e)+\frac{Bdinx^2\log(a)}{2}-\frac{Bdinx^2\log}{2} \\ ci\left(Ax+\frac{Ban\log\left(\frac{a}{c}+\frac{bx}{c}\right)}{b}+Bnx\log\left(\frac{a}{c}+\frac{bx}{c}\right)-Bnx+Bx\log(e)\right) \\ Acix+\frac{Adix^2}{2}-\frac{Ba^2din\log\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)}{2b^2}-\frac{Ba^2din\log\left(\frac{c}{d}+x\right)}{2b^2}+\frac{Bacin\log\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)}{b}+\frac{Bacin\log\left(\frac{c}{d}+x\right)}{b}+\frac{Badinx}{2b}-\frac{Bc^2in\log\left(\frac{c}{d}+x\right)}{2d} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Piecewise((c*i*x*(A + B*log(e*(a/c)**n)), Eq(b, 0) & Eq(d, 0)), (A*c*i*x +
A*d*i*x**2/2 - B*c**2*i*n*log(c + d*x)/(2*d) + B*c*i*n*x*log(a) - B*c*i*n*x
*log(c + d*x) + B*c*i*n*x/2 + B*c*i*x*log(e) + B*d*i*n*x**2*log(a)/2 - B*d*
i*n*x**2*log(c + d*x)/2 + B*d*i*n*x**2/4 + B*d*i*x**2*log(e)/2, Eq(b, 0)),
(c*i*(A*x + B*a*n*log(a/c + b*x/c)/b + B*n*x*log(a/c + b*x/c) - B*n*x + B*x
*log(e)), Eq(d, 0)), (A*c*i*x + A*d*i*x**2/2 - B*a**2*d*i*n*log(a/(c + d*x)
 + b*x/(c + d*x))/(2*b**2) - B*a**2*d*i*n*log(c/d + x)/(2*b**2) + B*a*c*i*n
*log(a/(c + d*x) + b*x/(c + d*x))/b + B*a*c*i*n*log(c/d + x)/b + B*a*d*i*n*
x/(2*b) - B*c**2*i*n*log(c/d + x)/(2*d) + B*c*i*n*x*log(a/(c + d*x) + b*x/(
c + d*x)) - B*c*i*n*x/2 + B*c*i*x*log(e) + B*d*i*n*x**2*log(a/(c + d*x) + b
*x/(c + d*x))/2 + B*d*i*x**2*log(e)/2, True))
```

3.112 $\int \frac{(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ag+bgx}\,dx$

Optimal. Leaf size=141

$$-\frac{i(bc-ad)\log\left(-\frac{bc-ad}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A-Bn\right)}{b^2g}+\frac{i(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{bg}+\frac{Bin(bc-ad)\text{Li}_2\left(\frac{bc\cdot}{d(a}\right.}{b^2g}$$

```
[Out] i*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b/g-(-a*d+b*c)*i*ln((a*d-b*c)/d/(
b*x+a))*(A-B*n+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/g+B*(-a*d+b*c)*i*n*polylog(
2,1+(-a*d+b*c)/d/(b*x+a))/b^2/g
```

Rubi [A] time = 0.34, antiderivative size = 223, normalized size of antiderivative = 1.58, number of steps used = 13, number of rules used = 10, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.244, Rules used = {2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bin(bc-ad)\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2g}+\frac{i(bc-ad)\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g}+\frac{Bdi(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^2g}-$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x),x]
```

```
[Out] (A*d*i*x)/(b*g) - (B*(b*c - a*d)*i*n*Log[a + b*x]^2)/(2*b^2*g) + (B*d*i*(a
+ b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(b^2*g) + ((b*c - a*d)*i*Log[a + b*x
]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*g) - (B*(b*c - a*d)*i*n*Log[
c + d*x])/(b^2*g) + (B*(b*c - a*d)*i*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c
- a*d)])/(b^2*g) + (B*(b*c - a*d)*i*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d
))])/(b^2*g)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
```

```
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(112c+112dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ag+bgx}\,dx = \int \left(\frac{112d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{bg} + \frac{112(bc-ad)\left(A+B\log\left(e\left(\right.\right.\right.}{bg(a+bx)}\right.$$

$$= \frac{(112d)\int \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx}{bg} + \frac{(112(bc-ad))\int \frac{A+B\log(e}{a+}}{bg}$$

$$= \frac{112Adx}{bg} + \frac{112(bc-ad)\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g} + -$$

$$= \frac{112Adx}{bg} + \frac{112Bd(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^2g} + \frac{112(bc-ad)\log(a+}{}$$

$$= \frac{112Adx}{bg} + \frac{112Bd(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^2g} + \frac{112(bc-ad)\log(a+}{}$$

$$= \frac{112Adx}{bg} + \frac{112Bd(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^2g} + \frac{112(bc-ad)\log(a+}{}$$

$$= \frac{112Adx}{bg} - \frac{56B(bc-ad)n\log^2(a+bx)}{b^2g} + \frac{112Bd(a+bx)\log\left(e\left(\right.\right.}{b^2g}$$

$$= \frac{112Adx}{bg} - \frac{56B(bc-ad)n\log^2(a+bx)}{b^2g} + \frac{112Bd(a+bx)\log\left(e\left(\right.\right.}{b^2g}$$

Mathematica [A] time = 0.13, size = 172, normalized size = 1.22

$$\frac{i\left(2(bc-ad)\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+Bn\log\left(\frac{b(c+dx)}{bc-ad}\right)+A\right)+2\left(Bd(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+Bn(ad-bc\right.\right.}{2b^2g}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g
*x),x]
```

```
[Out] (i*(B*(-(b*c) + a*d)*n*Log[a + b*x]^2 + 2*(A*b*d*x + B*d*(a + b*x)*Log[e*((
a + b*x)/(c + d*x))^n] + B*(-(b*c) + a*d)*n*Log[c + d*x]) + 2*(b*c - a*d)*L
og[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(b*(c + d*x))/(
b*c - a*d)]) + 2*B*(b*c - a*d)*n*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))
/(2*b^2*g)
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Adix+Aci+(Bdix+Bci)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{bgx+ag},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g),x, algor
ithm="fricas")
```

```
[Out] integral((A*d*i*x + A*c*i + (B*d*i*x + B*c*i)*log(e*((b*x + a)/(d*x + c))^n
))/(b*g*x + a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g),x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)}{bgx+ag}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g),x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g),x)
```

maxima [A] time = 4.58, size = 276, normalized size = 1.96

$$Adi\left(\frac{x}{bg}-\frac{a\log(bx+a)}{b^2g}\right)-\frac{Bcin\log(dx+c)}{bg}+\frac{Aci\log\left(bgx+ag\right)}{bg}+\frac{(bcin-adin)\left(\log(bx+a)\log\left(\frac{bdx+ad}{bc-ad}+1\right)\right.}{b^2g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g),x, algor
ithm="maxima")
```

```
[Out] A*d*i*(x/(b*g) - a*log(b*x + a)/(b^2*g)) - B*c*i*n*log(d*x + c)/(b*g) + A*c
*i*log(b*g*x + a*g)/(b*g) + (b*c*i*n - a*d*i*n)*(log(b*x + a)*log((b*d*x +
a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^2*g) + 1/2*
(2*B*b*d*i*x*log(e) - (b*c*i*n - a*d*i*n)*B*log(b*x + a)^2 + 2*(b*c*i*log(e
) + (i*n - i*log(e))*a*d)*B*log(b*x + a) + 2*(B*b*d*i*x + (b*c*i - a*d*i)*B
*log(b*x + a))*log((b*x + a)^n) - 2*(B*b*d*i*x + (b*c*i - a*d*i)*B*log(b*x
+ a))*log((d*x + c)^n))/(b^2*g)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c\,i+d\,i\,x)\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{a\,g+b\,g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x),x)
```

```
[Out] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x), x
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{i\left(\int \frac{Ac}{a+bx}\,dx+\int \frac{Adx}{a+bx}\,dx+\int \frac{Bc\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^{n}\right)}{a+bx}\,dx+\int \frac{Bdx\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^{n}\right)}{a+bx}\,dx\right)}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g),x)
```

```
[Out] i*(Integral(A*c/(a + b*x), x) + Integral(A*d*x/(a + b*x), x) + Integral(B*c
*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(a + b*x), x) + Integral(B*d*x*log
(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(a + b*x), x))/g
```

3.113 $\int \frac{(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=150

$$-\frac{di\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g^2}-\frac{i(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{bg^2(a+bx)}+\frac{BdinLi_2\left(\frac{b(c+dx)}{d(a+bx)}\right)}{b^2g^2}-\frac{Bin(c+}{bg^2(a+b}$$

```
[Out] -B*i*n*(d*x+c)/b/g^2/(b*x+a)-i*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b/g^
2/(b*x+a)-d*i*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(b*x+a))/b^2
/g^2+B*d*i*n*polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/g^2
```

Rubi [A] time = 0.38, antiderivative size = 233, normalized size of antiderivative = 1.55, number of steps used = 14, number of rules used = 11, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.268, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{BdinPolyLog\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2g^2}+\frac{di\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g^2}-\frac{i(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g^2(a+bx)}-\frac{Bin(}{b^2g^2}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^2,
x]
```

```
[Out] -((B*(b*c - a*d)*i*n)/(b^2*g^2*(a + b*x))) - (B*d*i*n*Log[a + b*x])/(b^2*g^
2) - (B*d*i*n*Log[a + b*x]^2)/(2*b^2*g^2) - ((b*c - a*d)*i*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n]))/(b^2*g^2*(a + b*x)) + (d*i*Log[a + b*x]*(A + B*Log[
e*((a + b*x)/(c + d*x))^n]))/(b^2*g^2) + (B*d*i*n*Log[c + d*x])/(b^2*g^2) +
 (B*d*i*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*g^2) + (B*d*i*n
*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(113c+113dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^2}dx = \int \left(\frac{113(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{bg^2(a+bx)^2} + \frac{113d\left(A+B\log\left(\right.\right.}{bg^2(a+\right.$$

$$= \frac{(113d)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}dx}{bg^2} + \frac{(113(bc-ad))\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.}{(a+bx)^2}}{bg^2}$$

$$= -\frac{113(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^2(a+bx)} + \frac{113d\log(a+bx)\left(A\right.}{b}$$

$$= -\frac{113(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^2(a+bx)} + \frac{113d\log(a+bx)\left(A\right.}{b}$$

$$= -\frac{113(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^2(a+bx)} + \frac{113d\log(a+bx)\left(A\right.}{b}$$

$$= -\frac{113B(bc-ad)n}{b^2g^2(a+bx)} - \frac{113Bdn\log(a+bx)}{b^2g^2} - \frac{113(bc-ad)\left(A+\right.}{b^2g^2(a}$$

$$= -\frac{113B(bc-ad)n}{b^2g^2(a+bx)} - \frac{113Bdn\log(a+bx)}{b^2g^2} - \frac{113Bdn\log^2(a+b}{2b^2g^2}$$

$$= -\frac{113B(bc-ad)n}{b^2g^2(a+bx)} - \frac{113Bdn\log(a+bx)}{b^2g^2} - \frac{113Bdn\log^2(a+b}{2b^2g^2}$$

Mathematica [A] time = 0.19, size = 189, normalized size = 1.26

$$\frac{i\left(\frac{d\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2} - \frac{(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2(a+bx)} - \frac{Bdn\left(-2\text{Li}_2\left(-\frac{d(a+bx)}{bc-ad}\right)-2\log(a+bx)\log\left(\frac{b(c+dx)}{bc-ad}\right)+\log^2(a+bx)\right)}{2b^2} - \frac{Bn\left(\right.}{}\right.}{g^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g
*x)^2,x]
```

```
[Out] (i*(-(((b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*(a + b*x)))
 + (d*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/b^2 - (B*n*((b*c
 - a*d)/(a + b*x) + d*Log[a + b*x] - d*Log[c + d*x]))/b^2 - (B*d*n*(Log[a +
 b*x]^2 - 2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] - 2*PolyLog[2, -((d
*(a + b*x))/(b*c - a*d))]))/(2*b^2)))/g^2
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Adix + Aci + (Bdix + Bci)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{b^2g^2x^2 + 2\,abg^2x + a^2g^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, alg
orithm="fricas")
```

```
[Out] integral((A*d*i*x + A*c*i + (B*d*i*x + B*c*i)*log(e*((b*x + a)/(d*x + c))^n
))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)}{\left(bgx+ag\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-Bcin\left(\frac{1}{b^{2}g^{2}x+abg^{2}}+\frac{d\log\left(bx+a\right)}{\left(b^{2}c-abd\right)g^{2}}-\frac{d\log\left(dx+c\right)}{\left(b^{2}c-abd\right)g^{2}}\right)+Bdi\left(\frac{\left(\left(bx+a\right)\log\left(bx+a\right)+a\right)\log\left(\left(bx+a\right)^{n}\right)-\left(\left(bx+\right.\right.}{b^{3}g^{2}x+ab^{2}g^{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, alg
orithm="maxima")
```

```
[Out] -B*c*i*n*(1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2) -
d*log(d*x + c)/((b^2*c - a*b*d)*g^2)) + B*d*i*((((b*x + a)*log(b*x + a) + a
)*log((b*x + a)^n) - ((b*x + a)*log(b*x + a) + a)*log((d*x + c)^n))/(b^3*g^
2*x + a*b^2*g^2) + integrate((b^2*d*x^2*log(e) + b^2*c*x*log(e) - a*b*c*n +
 a^2*d*n - (a*b*c*n - a^2*d*n + (b^2*c*n - a*b*d*n)*x)*log(b*x + a))/(b^4*d
*g^2*x^3 + a^2*b^2*c*g^2 + (b^4*c*g^2 + 2*a*b^3*d*g^2)*x^2 + (2*a*b^3*c*g^2
 + a^2*b^2*d*g^2)*x), x)) + A*d*i*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)
/(b^2*g^2)) - B*c*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^2*g^2*x + a*b
*g^2) - A*c*i/(b^2*g^2*x + a*b*g^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,i+d\,i\,x\right)\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{{\left(a\,g+b\,g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^2,
x)
```

```
[Out] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^2,
 x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**2,x)
```

```
[Out] Timed out
```

3.114 $\int \frac{(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^3}\,dx$

Optimal. Leaf size=89

$$-\frac{i(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^3(a+bx)^2(bc-ad)}-\frac{Bin(c+dx)^2}{4g^3(a+bx)^2(bc-ad)}$$

```
[Out] -1/4*B*i*n*(d*x+c)^2/(-a*d+b*c)/g^3/(b*x+a)^2-1/2*i*(d*x+c)^2*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))/(-a*d+b*c)/g^3/(b*x+a)^2
```

Rubi [B] time = 0.29, antiderivative size = 201, normalized size of antiderivative = 2.26, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.098, Rules used = {2528, 2525, 12, 44}

$$-\frac{di\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g^3(a+bx)}-\frac{i(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^2g^3(a+bx)^2}-\frac{Bd^2in\log(a+bx)}{2b^2g^3(bc-ad)}+\frac{Bd^2in\log(c+dx)}{2b^2g^3(bc-ad)}-\frac{Bin(bc}{4b^2g^3(a}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^3,
x]
```

```
[Out] -(B*(b*c - a*d)*i*n)/(4*b^2*g^3*(a + b*x)^2) - (B*d*i*n)/(2*b^2*g^3*(a + b*
x)) - (B*d^2*i*n*Log[a + b*x])/(2*b^2*(b*c - a*d)*g^3) - ((b*c - a*d)*i*(A
+ B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^2*g^3*(a + b*x)^2) - (d*i*(A + B*
Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*g^3*(a + b*x)) + (B*d^2*i*n*Log[c + d
*x])/(2*b^2*(b*c - a*d)*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(114c+114dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^3}\,dx = \int \left(\frac{114(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{bg^3(a+bx)^3} + \frac{114d\left(A+B\log\left(\right.\right.}{bg^3(a+b}\right.$$

$$= \frac{(114d)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^2}\,dx}{bg^3} + \frac{(114(bc-ad))\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^{n}\right)}{(a+bx)^3}}{bg^3}$$

$$= -\frac{57(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^3(a+bx)^2} - \frac{114d\left(A+B\log\left(e\left(\right.\right.\right.}{b^2g^3(a+bx)}$$

$$= -\frac{57(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^3(a+bx)^2} - \frac{114d\left(A+B\log\left(e\left(\right.\right.\right.}{b^2g^3(a+bx)}$$

$$= -\frac{57(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^3(a+bx)^2} - \frac{114d\left(A+B\log\left(e\left(\right.\right.\right.}{b^2g^3(a+bx)}$$

$$= -\frac{57B(bc-ad)n}{2b^2g^3(a+bx)^2} - \frac{57Bdn}{b^2g^3(a+bx)} - \frac{57Bd^2n\log(a+bx)}{b^2(bc-ad)g^3} - \frac{57(}{}$$

Mathematica [B] time = 0.17, size = 216, normalized size = 2.43

$$\frac{i\left(-\frac{d\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2(a+bx)} - \frac{(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^2(a+bx)^2} - \frac{Bn\left(-\frac{2d^2\log(a+bx)}{bc-ad}+\frac{2d^2\log(c+dx)}{bc-ad}+\frac{bc-ad}{(a+bx)^2}-\frac{2d}{a+bx}\right)}{4b^2} - \frac{Bdn\left(\frac{d\log(a+bx)}{bc-ad}-\frac{d\log(c+dx)}{bc-ad}\right.}{b^2}\right.}{g^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g
*x)^3,x]
```

```
[Out] (i*(-1/2*((b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*(a + b*x
)^2) - (d*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*(a + b*x)) - (B*d*n*
((a + b*x)^(-1) + (d*Log[a + b*x])/(b*c - a*d) - (d*Log[c + d*x])/(b*c - a*
d)))/b^2 - (B*n*((b*c - a*d)/(a + b*x)^2 - (2*d)/(a + b*x) - (2*d^2*Log[a +
 b*x])/(b*c - a*d) + (2*d^2*Log[c + d*x])/(b*c - a*d)))/(4*b^2)))/g^3
```

fricas [B] time = 0.86, size = 250, normalized size = 2.81

$$-\frac{\left(Bb^2c^2-Ba^2d^2\right)in+2\left(Ab^2c^2-Aa^2d^2\right)i+2\left(\left(Bb^2cd-Babd^2\right)in+2\left(Ab^2cd-Aabd^2\right)i\right)x+2\left(2\left(Bb^2cd-B\right.\right.}{4\left(\left(b^5c-ab^4d\right)g^3x^2+2\left(ab^4c-a^2b^3d\right)g^3x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, alg
orithm="fricas")
```

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

```
 2*B*b^2*c*d*i*n*x + B*b^2*c^2*i*n)*log((b*x + a)/(d*x + c)))/((b^5*c - a*b
^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3
)
```

giac [**A**] time = 7.18, size = 98, normalized size = 1.10

$$-\frac{1}{4}\left(\frac{2\,(dx+c)^2 Bin\log\left(\frac{bx+a}{dx+c}\right)}{(bx+a)^2 g^3}+\frac{(Bin+2\,Ai+2\,Bi)(dx+c)^2}{(bx+a)^2 g^3}\right)\left(\frac{bc}{(bc-ad)^2}-\frac{ad}{(bc-ad)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, alg
orithm="giac")
```

```
[Out] -1/4*(2*(d*x + c)^2*B*i*n*log((b*x + a)/(d*x + c))/((b*x + a)^2*g^3) + (B*i
*n + 2*A*i + 2*B*i)*(d*x + c)^2/((b*x + a)^2*g^3))*(b*c/(b*c - a*d)^2 - a*d
/(b*c - a*d)^2)
```

maple [**F**] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)}{(bgx+ag)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3,x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3,x)
```

maxima [**B**] time = 1.25, size = 582, normalized size = 6.54

$$-\frac{1}{4}Bdin\left(\frac{3\,abc-a^2d+2\left(2\,b^2c-abd\right)x}{\left(b^5c-ab^4d\right)g^3x^2+2\left(ab^4c-a^2b^3d\right)g^3x+\left(a^2b^3c-a^3b^2d\right)g^3}+\frac{2\left(2\,bcd-ad^2\right)\log\left(bx+a\right)}{\left(b^4c^2-2\,ab^3cd+a^2b^2d^2\right)g^3}-\frac{2\left(2\,bcd\right.}{\left(b^4c^2-2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, alg
orithm="maxima")
```

```
[Out] -1/4*B*d*i*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*
g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*
(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3)
- 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g
^3)) + 1/4*B*c*i*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*
(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*log(b*x +
a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)/((b^3*c^2
 - 2*a*b^2*c*d + a^2*b*d^2)*g^3)) - 1/2*(2*b*x + a)*B*d*i*log(e*(b*x/(d*x +
 c) + a/(d*x + c))^n)/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*(2*
b*x + a)*A*d*i/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*B*c*i*log(
e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3
) - 1/2*A*c*i/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3)
```

mupad [**B**] time = 5.25, size = 204, normalized size = 2.29

$$-\frac{x\,(2\,A\,b\,d\,i+B\,b\,d\,i\,n)+A\,a\,d\,i+A\,b\,c\,i+\frac{B\,a\,d\,i\,n}{2}+\frac{B\,b\,c\,i\,n}{2}}{2\,a^2\,b^2\,g^3+4\,a\,b^3\,g^3\,x+2\,b^4\,g^3\,x^2}-\frac{\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\left(\frac{B\,c\,i}{2\,b}+\frac{B\,a\,d\,i}{2\,b^2}+\frac{B\,d\,i\,x}{b}\right)}{a^2\,g^3+2\,a\,b\,g^3\,x+b^2\,g^3\,x^2}-\frac{B\,d^2\,i\,n\,\mathrm{atan}\left(\right.}{b^2\,g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^3,
x)
```

```
[Out] - (x*(2*A*b*d*i + B*b*d*i*n) + A*a*d*i + A*b*c*i + (B*a*d*i*n)/2 + (B*b*c*i
*n)/2)/(2*a^2*b^2*g^3 + 2*b^4*g^3*x^2 + 4*a*b^3*g^3*x) - (log(e*((a + b*x)/
(c + d*x))^n)*((B*c*i)/(2*b) + (B*a*d*i)/(2*b^2) + (B*d*i*x)/b))/(a^2*g^3 +
 b^2*g^3*x^2 + 2*a*b*g^3*x) - (B*d^2*i*n*atan((b*c*2i + b*d*x*2i)/(a*d - b*
c) + 1i)*1i)/(b^2*g^3*(a*d - b*c))
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**3,x)
```

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

3.115 $\int \frac{(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^4}\,dx$

Optimal. Leaf size=181

$$-\frac{bi(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3g^4(a+bx)^3(bc-ad)^2}+\frac{di(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^4(a+bx)^2(bc-ad)^2}-\frac{bBin(c+dx)^3}{9g^4(a+bx)^3(bc-ad)^2}+\frac{Bdin(c\ldots}{4g^4(a+bx)^2\ldots}$$

```
[Out] 1/4*B*d*i*n*(d*x+c)^2/(-a*d+b*c)^2/g^4/(b*x+a)^2-1/9*b*B*i*n*(d*x+c)^3/(-a*
d+b*c)^2/g^4/(b*x+a)^3+1/2*d*i*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-
a*d+b*c)^2/g^4/(b*x+a)^2-1/3*b*i*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/
(-a*d+b*c)^2/g^4/(b*x+a)^3
```

Rubi [A] time = 0.34, antiderivative size = 236, normalized size of antiderivative = 1.30, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.098$, Rules used = {2528, 2525, 12, 44}

$$-\frac{di\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^2g^4(a+bx)^2}-\frac{i(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^2g^4(a+bx)^3}+\frac{Bd^2in}{6b^2g^4(a+bx)(bc-ad)}+\frac{Bd^3in\log(a+bx)}{6b^2g^4(bc-ad)^2}-\frac{Bd\ldots}{6\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^4,
x]
```

```
[Out] -(B*(b*c - a*d)*i*n)/(9*b^2*g^4*(a + b*x)^3) - (B*d*i*n)/(12*b^2*g^4*(a + b
*x)^2) + (B*d^2*i*n)/(6*b^2*(b*c - a*d)*g^4*(a + b*x)) + (B*d^3*i*n*Log[a +
 b*x])/(6*b^2*(b*c - a*d)^2*g^4) - ((b*c - a*d)*i*(A + B*Log[e*((a + b*x)/(
c + d*x))^n]))/(3*b^2*g^4*(a + b*x)^3) - (d*i*(A + B*Log[e*((a + b*x)/(c +
d*x))^n]))/(2*b^2*g^4*(a + b*x)^2) - (B*d^3*i*n*Log[c + d*x])/(6*b^2*(b*c -
 a*d)^2*g^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
```

```
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(115c+115dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^4}\,dx = \int\left(\frac{115(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{bg^4(a+bx)^4}+\frac{115d\left(A+B\log\left(\right.\right.}{bg^4(a+b}\right.$$

$$=\frac{(115d)\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^3}\,dx}{bg^4}+\frac{(115(bc-ad))\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^{n}\right)}{(a+bx)^4}}{bg^4}$$

$$=-\frac{115(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3b^2g^4(a+bx)^3}-\frac{115d\left(A+B\log\left(e\left(\right.\right.\right.}{2b^2g^4(a+bx}$$

$$=-\frac{115(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3b^2g^4(a+bx)^3}-\frac{115d\left(A+B\log\left(e\left(\right.\right.\right.}{2b^2g^4(a+bx}$$

$$=-\frac{115(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3b^2g^4(a+bx)^3}-\frac{115d\left(A+B\log\left(e\left(\right.\right.\right.}{2b^2g^4(a+bx}$$

$$=-\frac{115B(bc-ad)n}{9b^2g^4(a+bx)^3}-\frac{115Bdn}{12b^2g^4(a+bx)^2}+\frac{115Bd^2n}{6b^2(bc-ad)g^4(a+bx}$$

Mathematica [A] time = 0.45, size = 196, normalized size = 1.08

$$-\frac{i\left(\frac{12Abc}{(a+bx)^3}+\frac{18Ad}{(a+bx)^2}-\frac{12aAd}{(a+bx)^3}-\frac{6Bd^3n\log(a+bx)}{(bc-ad)^2}+\frac{6Bd^3n\log(c+dx)}{(bc-ad)^2}-\frac{6Bd^2n}{(a+bx)(bc-ad)}+\frac{6B(ad+2bc+3bdx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^3}+\frac{4bBcn}{(a+bx}\right.}{36b^2g^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g
*x)^4,x]
```

```
[Out] -1/36*(i*((12*A*b*c)/(a + b*x)^3 - (12*a*A*d)/(a + b*x)^3 + (4*b*B*c*n)/(a
+ b*x)^3 - (4*a*B*d*n)/(a + b*x)^3 + (18*A*d)/(a + b*x)^2 + (3*B*d*n)/(a +
b*x)^2 - (6*B*d^2*n)/((b*c - a*d)*(a + b*x)) - (6*B*d^3*n*Log[a + b*x])/(b*
c - a*d)^2 + (6*B*(2*b*c + a*d + 3*b*d*x)*Log[e*((a + b*x)/(c + d*x))^n])/(
a + b*x)^3 + (6*B*d^3*n*Log[c + d*x])/(b*c - a*d)^2))/(b^2*g^4)
```

fricas [B] time = 0.63, size = 478, normalized size = 2.64

$$\frac{6\left(Bb^3cd^2-Bab^2d^3\right)inx^2-\left(4\,Bb^3c^3-9\,Bab^2c^2d+5\,Ba^3d^3\right)in-6\left(2\,Ab^3c^3-3\,Aab^2c^2d+Aa^3d^3\right)i-3\left(\left(Bb^3c\right.\right.}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, alg
orithm="fricas")
```

```
[Out] 1/36*(6*(B*b^3*c*d^2 - B*a*b^2*d^3)*i*n*x^2 - (4*B*b^3*c^3 - 9*B*a*b^2*c^2*
d + 5*B*a^3*d^3)*i*n - 6*(2*A*b^3*c^3 - 3*A*a*b^2*c^2*d + A*a^3*d^3)*i - 3*
((B*b^3*c^2*d - 6*B*a*b^2*c*d^2 + 5*B*a^2*b*d^3)*i*n + 6*(A*b^3*c^2*d - 2*A
*a*b^2*c*d^2 + A*a^2*b*d^3)*i)*x - 6*(3*(B*b^3*c^2*d - 2*B*a*b^2*c*d^2 + B*
a^2*b*d^3)*i*x + (2*B*b^3*c^3 - 3*B*a*b^2*c^2*d + B*a^3*d^3)*i)*log(e) + 6*
(B*b^3*d^3*i*n*x^3 + 3*B*a*b^2*d^3*i*n*x^2 - 3*(B*b^3*c^2*d - 2*B*a*b^2*c*d
^2)*i*n*x - (2*B*b^3*c^3 - 3*B*a*b^2*c^2*d)*i*n)*log((b*x + a)/(d*x + c)))/
((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c
*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g
^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4)
```

giac [A] time = 11.76, size = 230, normalized size = 1.27

$$-\frac{1}{36}\left(\frac{6\left(2\,Bbin-\frac{3\,(bx+a)Bdin}{dx+c}\right)\log\left(\frac{bx+a}{dx+c}\right)}{\frac{(bx+a)^3bcg^4}{(dx+c)^3}-\frac{(bx+a)^3adg^4}{(dx+c)^3}}+\frac{4\,Bbin-\frac{9\,(bx+a)Bdin}{dx+c}+12\,Abi+12\,Bbi-\frac{18\,(bx+a)Adi}{dx+c}-\frac{18\,(bx+a)Bdi}{dx+c}}{\frac{(bx+a)^3bcg^4}{(dx+c)^3}-\frac{(bx+a)^3adg^4}{(dx+c)^3}}\right)\Bigg(\frac{}{(bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, alg
orithm="giac")
```

```
[Out] -1/36*(6*(2*B*b*i*n - 3*(b*x + a)*B*d*i*n/(d*x + c))*log((b*x + a)/(d*x + c
))/((b*x + a)^3*b*c*g^4/(d*x + c)^3 - (b*x + a)^3*a*d*g^4/(d*x + c)^3) + (4
*B*b*i*n - 9*(b*x + a)*B*d*i*n/(d*x + c) + 12*A*b*i + 12*B*b*i - 18*(b*x +
a)*A*d*i/(d*x + c) - 18*(b*x + a)*B*d*i/(d*x + c))/((b*x + a)^3*b*c*g^4/(d*
x + c)^3 - (b*x + a)^3*a*d*g^4/(d*x + c)^3))*(b*c/(b*c - a*d)^2 - a*d/(b*c
- a*d)^2)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)}{(bgx+ag)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4,x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4,x)
```

maxima [B] time = 2.12, size = 945, normalized size = 5.22

$$-\frac{1}{18}\,Bcin\left(\frac{6\,b^2d^2x^2+2\,b^2c^2-7\,abcd+11\,a^2d^2-3\left(b^2cd-5\,abd^2\right)x}{\left(b^6c^2-2\,ab^5cd+a^2b^4d^2\right)g^4x^3+3\left(ab^5c^2-2\,a^2b^4cd+a^3b^3d^2\right)g^4x^2+3\left(a^2b^4c^2-2\,a^3b^3cd+a^4b^2d^2\right)g^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, alg
orithm="maxima")
```

```
[Out] -1/18*B*c*i*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2
*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*
b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3
*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4)
+ 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^
3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 -
a^3*b*d^3)*g^4)) - 1/36*B*d*i*n*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 -
6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*
```

```
x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^
5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2
)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 -
 a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*
d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d +
3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4)) - 1/6*(3*b*x + a)*B*d*i*log(e*(b*x/(d*
x + c) + a/(d*x + c))^n)/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x +
 a^3*b^2*g^4) - 1/6*(3*b*x + a)*A*d*i/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^
2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*B*c*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^
n)/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) - 1/3*A*c*
i/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4)
```

mupad [**B**] time = 5.28, size = 374, normalized size = 2.07

$$-\frac{\frac{6\,A\,a^2\,d^2\,i-12\,A\,b^2\,c^2\,i+5\,B\,a^2\,d^2\,i\,n-4\,B\,b^2\,c^2\,i\,n+6\,A\,a\,b\,c\,d\,i+5\,B\,a\,b\,c\,d\,i\,n}{6\,\left(a\,d-b\,c\right)}+\frac{x\,\left(6\,A\,a\,b\,d^2\,i-6\,A\,b^2\,c\,d\,i-B\,b^2\,c\,d\,i\,n+5\,B\,a\,b\,d^2\,i\,n\right)}{2\,\left(a\,d-b\,c\right)}+\frac{B\,b^2\,d^2\,i\,n\,x}{a\,d-b\,c}}{6\,a^3\,b^2\,g^4+18\,a^2\,b^3\,g^4\,x+18\,a\,b^4\,g^4\,x^2+6\,b^5\,g^4\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^4,
x)
```

```
[Out] - ((6*A*a^2*d^2*i - 12*A*b^2*c^2*i + 5*B*a^2*d^2*i*n - 4*B*b^2*c^2*i*n + 6*
A*a*b*c*d*i + 5*B*a*b*c*d*i*n)/(6*(a*d - b*c)) + (x*(6*A*a*b*d^2*i - 6*A*b^
2*c*d*i - B*b^2*c*d*i*n + 5*B*a*b*d^2*i*n))/(2*(a*d - b*c)) + (B*b^2*d^2*i*
n*x^2)/(a*d - b*c))/(6*a^3*b^2*g^4 + 6*b^5*g^4*x^3 + 18*a^2*b^3*g^4*x + 18*
a*b^4*g^4*x^2) - (log(e*((a + b*x)/(c + d*x))^n)*((B*c*i)/(3*b) + (B*a*d*i)
/(6*b^2) + (B*d*i*x)/(2*b)))/(a^3*g^4 + b^3*g^4*x^3 + 3*a*b^2*g^4*x^2 + 3*a
^2*b*g^4*x) - (B*d^3*i*n*atanh((6*b^4*c^2*g^4 - 6*a^2*b^2*d^2*g^4)/(6*b^2*g
^4*(a*d - b*c)^2) - (2*b*d*x)/(a*d - b*c)))/(3*b^2*g^4*(a*d - b*c)^2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**4,x)
```

```
[Out] Timed out
```

3.116 $\int \frac{(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^5}\,dx$

Optimal. Leaf size=281

$$-\frac{b^2i(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4g^5(a+bx)^4(bc-ad)^3}-\frac{d^2i(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^5(a+bx)^2(bc-ad)^3}+\frac{2bdi(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+\right.}{3g^5(a+bx)^3(bc-ad)^3}$$

```
[Out] -1/4*B*d^2*i*n*(d*x+c)^2/(-a*d+b*c)^3/g^5/(b*x+a)^2+2/9*b*B*d*i*n*(d*x+c)^3
/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/16*b^2*B*i*n*(d*x+c)^4/(-a*d+b*c)^3/g^5/(b*x+
a)^4-1/2*d^2*i*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^5/(
b*x+a)^2+2/3*b*d*i*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g
^5/(b*x+a)^3-1/4*b^2*i*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)
^3/g^5/(b*x+a)^4
```

Rubi [A] time = 0.41, antiderivative size = 269, normalized size of antiderivative = 0.96, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}} = 0.098$, Rules used = {2528, 2525, 12, 44}

$$-\frac{di\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^2g^5(a+bx)^3}-\frac{i(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4b^2g^5(a+bx)^4}-\frac{Bd^3in}{12b^2g^5(a+bx)(bc-ad)^2}+\frac{Bd^2in}{24b^2g^5(a+bx)^2(bc-}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^5,
x]
```

```
[Out] -(B*(b*c - a*d)*i*n)/(16*b^2*g^5*(a + b*x)^4) - (B*d*i*n)/(36*b^2*g^5*(a +
b*x)^3) + (B*d^2*i*n)/(24*b^2*(b*c - a*d)*g^5*(a + b*x)^2) - (B*d^3*i*n)/(1
2*b^2*(b*c - a*d)^2*g^5*(a + b*x)) - (B*d^4*i*n*Log[a + b*x])/(12*b^2*(b*c
- a*d)^3*g^5) - ((b*c - a*d)*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(4*b
^2*g^5*(a + b*x)^4) - (d*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^2*g
^5*(a + b*x)^3) + (B*d^4*i*n*Log[c + d*x])/(12*b^2*(b*c - a*d)^3*g^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(116c+116dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^5}dx = \int \left(\frac{116(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{bg^5(a+bx)^5}+\frac{116d\left(A+B\log\left(\right.\right.}{bg^5(a+b}\right.$$

$$=\frac{(116d)\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^4}dx}{bg^5}+\frac{(116(bc-ad))\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^5}}{bg^5}$$

$$=-\frac{29(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^5(a+bx)^4}-\frac{116d\left(A+B\log\left(e\left(\right.\right.\right.}{3b^2g^5(a+bx)}$$

$$=-\frac{29(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^5(a+bx)^4}-\frac{116d\left(A+B\log\left(e\left(\right.\right.\right.}{3b^2g^5(a+bx)}$$

$$=-\frac{29(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^5(a+bx)^4}-\frac{116d\left(A+B\log\left(e\left(\right.\right.\right.}{3b^2g^5(a+bx)}$$

$$=-\frac{29B(bc-ad)n}{4b^2g^5(a+bx)^4}-\frac{29Bdn}{9b^2g^5(a+bx)^3}+\frac{29Bd^2n}{6b^2(bc-ad)g^5(a+bx)^2}$$

Mathematica [A] time = 0.50, size = 220, normalized size = 0.78

$$-\frac{i\left(\frac{36Abc}{(a+bx)^4}+\frac{48Ad}{(a+bx)^3}-\frac{36aAd}{(a+bx)^4}+\frac{12Bd^4n\log(a+bx)}{(bc-ad)^3}-\frac{12Bd^4n\log(c+dx)}{(bc-ad)^3}+\frac{12Bd^3n}{(a+bx)(bc-ad)^2}-\frac{6Bd^2n}{(a+bx)^2(bc-ad)}+\frac{12B(ad+3bc+4bdx)\,\mathrm{l}}{(a+bx)^4}\right.}{144b^2g^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g
*x)^5,x]
```

```
[Out] -1/144*(i*((36*A*b*c)/(a + b*x)^4 - (36*a*A*d)/(a + b*x)^4 + (9*b*B*c*n)/(a
 + b*x)^4 - (9*a*B*d*n)/(a + b*x)^4 + (48*A*d)/(a + b*x)^3 + (4*B*d*n)/(a +
 b*x)^3 - (6*B*d^2*n)/((b*c - a*d)*(a + b*x)^2) + (12*B*d^3*n)/((b*c - a*d)
^2*(a + b*x)) + (12*B*d^4*n*Log[a + b*x])/(b*c - a*d)^3 + (12*B*(3*b*c + a*
d + 4*b*d*x)*Log[e*((a + b*x)/(c + d*x))^n])/(a + b*x)^4 - (12*B*d^4*n*Log[
c + d*x])/(b*c - a*d)^3))/(b^2*g^5)
```

fricas [B] time = 0.65, size = 773, normalized size = 2.75

$$-\frac{12\left(Bb^4cd^3-Bab^3d^4\right)inx^3-6\left(Bb^4c^2d^2-8\,Bab^3cd^3+7\,Ba^2b^2d^4\right)inx^2+\left(9\,Bb^4c^4-32\,Bab^3c^3d+36\,Ba^2b^2c^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, alg
orithm="fricas")
```

```
[Out] -1/144*(12*(B*b^4*c*d^3 - B*a*b^3*d^4)*i*n*x^3 - 6*(B*b^4*c^2*d^2 - 8*B*a*b
^3*c*d^3 + 7*B*a^2*b^2*d^4)*i*n*x^2 + (9*B*b^4*c^4 - 32*B*a*b^3*c^3*d + 36*
B*a^2*b^2*c^2*d^2 - 13*B*a^4*d^4)*i*n + 12*(3*A*b^4*c^4 - 8*A*a*b^3*c^3*d +
 6*A*a^2*b^2*c^2*d^2 - A*a^4*d^4)*i + 4*((B*b^4*c^3*d - 6*B*a*b^3*c^2*d^2 +
 18*B*a^2*b^2*c*d^3 - 13*B*a^3*b*d^4)*i*n + 12*(A*b^4*c^3*d - 3*A*a*b^3*c^2
*d^2 + 3*A*a^2*b^2*c*d^3 - A*a^3*b*d^4)*i)*x + 12*(4*(B*b^4*c^3*d - 3*B*a*b
^3*c^2*d^2 + 3*B*a^2*b^2*c*d^3 - B*a^3*b*d^4)*i*x + (3*B*b^4*c^4 - 8*B*a*b^
3*c^3*d + 6*B*a^2*b^2*c^2*d^2 - B*a^4*d^4)*i)*log(e) + 12*(B*b^4*d^4*i*n*x^
4 + 4*B*a*b^3*d^4*i*n*x^3 + 6*B*a^2*b^2*d^4*i*n*x^2 + 4*(B*b^4*c^3*d - 3*B*
a*b^3*c^2*d^2 + 3*B*a^2*b^2*c*d^3)*i*n*x + (3*B*b^4*c^4 - 8*B*a*b^3*c^3*d +
 6*B*a^2*b^2*c^2*d^2)*i*n)*log((b*x + a)/(d*x + c)))/((b^9*c^3 - 3*a*b^8*c^
2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2
*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^
2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c
^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*
d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5)
```

giac [A] time = 17.57, size = 388, normalized size = 1.38

$$-\frac{1}{144}\left(\frac{12\left(3\,Bb^2in-\frac{8\,(bx+a)Bbdin}{dx+c}+\frac{6\,(bx+a)^2Bd^2in}{(dx+c)^2}\right)\log\left(\frac{bx+a}{dx+c}\right)}{\frac{(bx+a)^4b^2c^2g^5}{(dx+c)^4}-\frac{2\,(bx+a)^4abcdg^5}{(dx+c)^4}+\frac{(bx+a)^4a^2d^2g^5}{(dx+c)^4}}+\frac{9\,Bb^2in-\frac{32\,(bx+a)Bbdin}{dx+c}+\frac{36\,(bx+a)^2Bd^2in}{(dx+c)^2}+36\,Ab^2i+}{\frac{(bx+a)^4b^2c^2g^5}{(dx+c)^4}-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, alg
orithm="giac")
```

```
[Out] -1/144*(12*(3*B*b^2*i*n - 8*(b*x + a)*B*b*d*i*n/(d*x + c) + 6*(b*x + a)^2*B
*d^2*i*n/(d*x + c)^2)*log((b*x + a)/(d*x + c))/((b*x + a)^4*b^2*c^2*g^5/(d*
x + c)^4 - 2*(b*x + a)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x + a)^4*a^2*d^2*g^5/
(d*x + c)^4) + (9*B*b^2*i*n - 32*(b*x + a)*B*b*d*i*n/(d*x + c) + 36*(b*x +
a)^2*B*d^2*i*n/(d*x + c)^2 + 36*A*b^2*i + 36*B*b^2*i - 96*(b*x + a)*A*b*d*i
/(d*x + c) - 96*(b*x + a)*B*b*d*i/(d*x + c) + 72*(b*x + a)^2*A*d^2*i/(d*x +
 c)^2 + 72*(b*x + a)^2*B*d^2*i/(d*x + c)^2)/((b*x + a)^4*b^2*c^2*g^5/(d*x +
 c)^4 - 2*(b*x + a)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x + a)^4*a^2*d^2*g^5/(d*
x + c)^4))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)}{(bgx+ag)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^5,x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^5,x)
```

maxima [B] time = 1.89, size = 1398, normalized size = 4.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, alg
orithm="maxima")
```

```
[Out] 1/48*B*c*i*n*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d^2
 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*c*
d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^
5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4
*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^
3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b
^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^
3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2
 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*a*
b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5)) - 1/144*
B*d*i*n*((7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12
*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^
2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^
3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 +
4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6
*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 +
4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (
a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4
*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^
2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x +
c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^
2*d^4)*g^5)) - 1/12*(4*b*x + a)*B*d*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n
)/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^
4*b^2*g^5) - 1/12*(4*b*x + a)*A*d*i/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*
b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/4*B*c*i*log(e*(b*x/(d*x +
c) + a/(d*x + c))^n)/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4
*a^3*b^2*g^5*x + a^4*b*g^5) - 1/4*A*c*i/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*
a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5)
```

mupad [B] time = 5.87, size = 610, normalized size = 2.17

$$\frac{B\,d^4\,i\,n\,\mathrm{atanh}\left(\frac{12\,a^3\,b^2\,d^3\,g^5-12\,a^2\,b^3\,c\,d^2\,g^5-12\,a\,b^4\,c^2\,d\,g^5+12\,b^5\,c^3\,g^5}{12\,b^2\,g^5\,{\left(a\,d-b\,c\right)}^3}+\frac{2\,b\,d\,x\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}{{\left(a\,d-b\,c\right)}^3}\right)}{6\,b^2\,g^5\,{\left(a\,d-b\,c\right)}^3}-\frac{\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)}{a^4\,g^5+4\,a^3\,b\,g^5\,x+6\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^5,
x)
```

```
[Out] (B*d^4*i*n*atanh((12*b^5*c^3*g^5 + 12*a^3*b^2*d^3*g^5 - 12*a*b^4*c^2*d*g^5
- 12*a^2*b^3*c*d^2*g^5)/(12*b^2*g^5*(a*d - b*c)^3) + (2*b*d*x*(a^2*d^2 + b^
2*c^2 - 2*a*b*c*d))/(a*d - b*c)^3))/(6*b^2*g^5*(a*d - b*c)^3) - (log(e*((a
+ b*x)/(c + d*x))^n)*((B*c*i)/(4*b) + (B*a*d*i)/(12*b^2) + (B*d*i*x)/(3*b))
)/(a^4*g^5 + b^4*g^5*x^4 + 4*a*b^3*g^5*x^3 + 6*a^2*b^2*g^5*x^2 + 4*a^3*b*g^
5*x) - ((12*A*a^3*d^3*i + 36*A*b^3*c^3*i + 13*B*a^3*d^3*i*n + 9*B*b^3*c^3*i
*n - 60*A*a*b^2*c^2*d*i + 12*A*a^2*b*c*d^2*i - 23*B*a*b^2*c^2*d*i*n + 13*B*
a^2*b*c*d^2*i*n)/(12*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x*(12*A*a^2*b*d^3*
i + 12*A*b^3*c^2*d*i - 24*A*a*b^2*c*d^2*i + 13*B*a^2*b*d^3*i*n + B*b^3*c^2*
d*i*n - 5*B*a*b^2*c*d^2*i*n))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (d*x^2*
(B*b^3*c*d*i*n - 7*B*a*b^2*d^2*i*n))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) +
(B*b^3*d^3*i*n*x^3)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))/(12*a^4*b^2*g^5 + 12*b
^6*g^5*x^4 + 48*a^3*b^3*g^5*x + 48*a*b^5*g^5*x^3 + 72*a^2*b^4*g^5*x^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**5,x)
```

```
[Out] Timed out
```

3.117 $\int (ag+bgx)^3(ci+dix)^2 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx$

Optimal. Leaf size=442

$$\frac{b^3g^3i^2(c+dx)^6\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{6d^4}-\frac{3b^2g^3i^2(c+dx)^5(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{5d^4}-\frac{g^3i^2(c+dx)^3(bc\cdots}{}$$

```
[Out] 1/60*B*(-a*d+b*c)^5*g^3*i^2*n*x/b^2/d^3+1/120*B*(-a*d+b*c)^4*g^3*i^2*n*(d*x
+c)^2/b/d^4-19/180*B*(-a*d+b*c)^3*g^3*i^2*n*(d*x+c)^3/d^4+13/120*b*B*(-a*d+
b*c)^2*g^3*i^2*n*(d*x+c)^4/d^4-1/30*b^2*B*(-a*d+b*c)*g^3*i^2*n*(d*x+c)^5/d^
4-1/3*(-a*d+b*c)^3*g^3*i^2*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^4+3/
4*b*(-a*d+b*c)^2*g^3*i^2*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^4-3/5*
b^2*(-a*d+b*c)*g^3*i^2*(d*x+c)^5*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^4+1/6*b^
3*g^3*i^2*(d*x+c)^6*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^4+1/60*B*(-a*d+b*c)^6
*g^3*i^2*n*ln((b*x+a)/(d*x+c))/b^3/d^4+1/60*B*(-a*d+b*c)^6*g^3*i^2*n*ln(d*x
+c)/b^3/d^4
```

Rubi [A] time = 0.69, antiderivative size = 345, normalized size of antiderivative = 0.78, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2g^3i^2(a+bx)^6\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{6b^3}+\frac{g^3i^2(a+bx)^4(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4b^3}+\frac{2dg^3i^2(a+bx)^5(bc\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),
x]
```

```
[Out] -(B*(b*c - a*d)^5*g^3*i^2*n*x)/(60*b^2*d^3) + (B*(b*c - a*d)^4*g^3*i^2*n*(a
 + b*x)^2)/(120*b^3*d^2) - (B*(b*c - a*d)^3*g^3*i^2*n*(a + b*x)^3)/(180*b^3
*d) - (7*B*(b*c - a*d)^2*g^3*i^2*n*(a + b*x)^4)/(120*b^3) - (B*d*(b*c - a*d
)*g^3*i^2*n*(a + b*x)^5)/(30*b^3) + ((b*c - a*d)^2*g^3*i^2*(a + b*x)^4*(A +
 B*Log[e*((a + b*x)/(c + d*x))^n]))/(4*b^3) + (2*d*(b*c - a*d)*g^3*i^2*(a +
 b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(5*b^3) + (d^2*g^3*i^2*(a +
 b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^3) + (B*(b*c - a*d)^6*
g^3*i^2*n*Log[c + d*x])/(60*b^3*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (117c + 117dx)^2 (ag + bgx)^3 \left(A + B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx = \int \left(\frac{13689(bc-ad)^2(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+}{c+}\right.\right.\right.}{b^2}\right.$$

$$= \frac{\left(13689(bc-ad)^2\right)\int (ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+}{c+}\right.\right.\right.}{b^2}$$

$$= \frac{13689(bc-ad)^2 g^3 (a+bx)^4 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{4b^3}$$

$$= \frac{13689(bc-ad)^2 g^3 (a+bx)^4 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{4b^3}$$

$$= \frac{13689(bc-ad)^2 g^3 (a+bx)^4 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{4b^3}$$

$$= -\frac{4563B(bc-ad)^5 g^3 nx}{20b^2d^3} + \frac{4563B(bc-ad)^4 g^3 n(a\ -}{40b^3d^2}$$

Mathematica [A] time = 0.40, size = 441, normalized size = 1.00

$$\frac{g^3 i^2 \left(60d^6(a+bx)^6\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+144d^5(a+bx)^5(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+90d^4(a+bx)^4(b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n]),x]
```

```
[Out] (g^3*i^2*(90*d^4*(b*c - a*d)^2*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x
))^n]) + 144*d^5*(b*c - a*d)*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))
^n]) + 60*d^6*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 15*B*(b*
c - a*d)^3*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*
d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*c - a*d)^2*n*(12*
b*d*(b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(
a + b*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]) - B*(b*c -
a*d)*n*(60*b*d*(b*c - a*d)^4*x + 30*d^2*(-(b*c) + a*d)^3*(a + b*x)^2 + 20*d
^3*(b*c - a*d)^2*(a + b*x)^3 + 15*d^4*(-(b*c) + a*d)*(a + b*x)^4 + 12*d^5*(
a + b*x)^5 - 60*(b*c - a*d)^5*Log[c + d*x])))/(360*b^3*d^4)
```

fricas [B] time = 1.66, size = 1074, normalized size = 2.43

$$\frac{60\,Ab^6d^6g^3i^2x^6 + 6\left(15\,Ba^4b^2c^2d^4 - 6\,Ba^5bcd^5 + Ba^6d^6\right)g^3i^2n\log\left(bx+a\right) + 6\left(Bb^6c^6 - 6\,Bab^5c^5d + 15\,Ba^2b^4c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="fricas")
```

```
[Out] 1/360*(60*A*b^6*d^6*g^3*i^2*x^6 + 6*(15*B*a^4*b^2*c^2*d^4 - 6*B*a^5*b*c*d^5
 + B*a^6*d^6)*g^3*i^2*n*log(b*x + a) + 6*(B*b^6*c^6 - 6*B*a*b^5*c^5*d + 15*
B*a^2*b^4*c^4*d^2 - 20*B*a^3*b^3*c^3*d^3)*g^3*i^2*n*log(d*x + c) - 12*((B*b
^6*c*d^5 - B*a*b^5*d^6)*g^3*i^2*n - 6*(2*A*b^6*c*d^5 + 3*A*a*b^5*d^6)*g^3*i
^2)*x^5 - 3*((7*B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5 - 13*B*a^2*b^4*d^6)*g^3*i^2
*n - 30*(A*b^6*c^2*d^4 + 6*A*a*b^5*c*d^5 + 3*A*a^2*b^4*d^6)*g^3*i^2)*x^4 -
2*((B*b^6*c^3*d^3 + 39*B*a*b^5*c^2*d^4 - 21*B*a^2*b^4*c*d^5 - 19*B*a^3*b^3*
d^6)*g^3*i^2*n - 60*(3*A*a*b^5*c^2*d^4 + 6*A*a^2*b^4*c*d^5 + A*a^3*b^3*d^6)
*g^3*i^2)*x^3 + 3*((B*b^6*c^4*d^2 - 6*B*a*b^5*c^3*d^3 - 30*B*a^2*b^4*c^2*d^
4 + 34*B*a^3*b^3*c*d^5 + B*a^4*b^2*d^6)*g^3*i^2*n + 60*(3*A*a^2*b^4*c^2*d^4
 + 2*A*a^3*b^3*c*d^5)*g^3*i^2)*x^2 + 6*(60*A*a^3*b^3*c^2*d^4*g^3*i^2 - (B*b
^6*c^5*d - 6*B*a*b^5*c^4*d^2 + 15*B*a^2*b^4*c^3*d^3 - 5*B*a^3*b^3*c^2*d^4 -
 6*B*a^4*b^2*c*d^5 + B*a^5*b*d^6)*g^3*i^2*n)*x + 6*(10*B*b^6*d^6*g^3*i^2*x^
6 + 60*B*a^3*b^3*c^2*d^4*g^3*i^2*x + 12*(2*B*b^6*c*d^5 + 3*B*a*b^5*d^6)*g^3
*i^2*x^5 + 15*(B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5 + 3*B*a^2*b^4*d^6)*g^3*i^2*x
^4 + 20*(3*B*a*b^5*c^2*d^4 + 6*B*a^2*b^4*c*d^5 + B*a^3*b^3*d^6)*g^3*i^2*x^3
 + 30*(3*B*a^2*b^4*c^2*d^4 + 2*B*a^3*b^3*c*d^5)*g^3*i^2*x^2)*log(e) + 6*(10
*B*b^6*d^6*g^3*i^2*n*x^6 + 60*B*a^3*b^3*c^2*d^4*g^3*i^2*n*x + 12*(2*B*b^6*c
*d^5 + 3*B*a*b^5*d^6)*g^3*i^2*n*x^5 + 15*(B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5 +
 3*B*a^2*b^4*d^6)*g^3*i^2*n*x^4 + 20*(3*B*a*b^5*c^2*d^4 + 6*B*a^2*b^4*c*d^5
 + B*a^3*b^3*d^6)*g^3*i^2*n*x^3 + 30*(3*B*a^2*b^4*c^2*d^4 + 2*B*a^3*b^3*c*d
^5)*g^3*i^2*n*x^2)*log((b*x + a)/(d*x + c)))/(b^3*d^4)
```

giac [B] time = 11.65, size = 4589, normalized size = 10.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="giac")
```

```
[Out] 1/360*(6*(B*b^10*c^7*g^3*n - 7*B*a*b^9*c^6*d*g^3*n - 6*(b*x + a)*B*b^9*c^7*
d*g^3*n/(d*x + c) + 21*B*a^2*b^8*c^5*d^2*g^3*n + 42*(b*x + a)*B*a*b^8*c^6*d
^2*g^3*n/(d*x + c) + 15*(b*x + a)^2*B*b^8*c^7*d^2*g^3*n/(d*x + c)^2 - 35*B*
a^3*b^7*c^4*d^3*g^3*n - 126*(b*x + a)*B*a^2*b^7*c^5*d^3*g^3*n/(d*x + c) - 1
05*(b*x + a)^2*B*a*b^7*c^6*d^3*g^3*n/(d*x + c)^2 - 20*(b*x + a)^3*B*b^7*c^7
*d^3*g^3*n/(d*x + c)^3 + 35*B*a^4*b^6*c^3*d^4*g^3*n + 210*(b*x + a)*B*a^3*b
^6*c^4*d^4*g^3*n/(d*x + c) + 315*(b*x + a)^2*B*a^2*b^6*c^5*d^4*g^3*n/(d*x +
 c)^2 + 140*(b*x + a)^3*B*a*b^6*c^6*d^4*g^3*n/(d*x + c)^3 - 21*B*a^5*b^5*c^
2*d^5*g^3*n - 210*(b*x + a)*B*a^4*b^5*c^3*d^5*g^3*n/(d*x + c) - 525*(b*x +
a)^2*B*a^3*b^5*c^4*d^5*g^3*n/(d*x + c)^2 - 420*(b*x + a)^3*B*a^2*b^5*c^5*d^
5*g^3*n/(d*x + c)^3 + 7*B*a^6*b^4*c*d^6*g^3*n + 126*(b*x + a)*B*a^5*b^4*c^2
*d^6*g^3*n/(d*x + c) + 525*(b*x + a)^2*B*a^4*b^4*c^3*d^6*g^3*n/(d*x + c)^2
+ 700*(b*x + a)^3*B*a^3*b^4*c^4*d^6*g^3*n/(d*x + c)^3 - B*a^7*b^3*d^7*g^3*n
 - 42*(b*x + a)*B*a^6*b^3*c*d^7*g^3*n/(d*x + c) - 315*(b*x + a)^2*B*a^5*b^3
*c^2*d^7*g^3*n/(d*x + c)^2 - 700*(b*x + a)^3*B*a^4*b^3*c^3*d^7*g^3*n/(d*x +
 c)^3 + 6*(b*x + a)*B*a^7*b^2*d^8*g^3*n/(d*x + c) + 105*(b*x + a)^2*B*a^6*b
^2*c*d^8*g^3*n/(d*x + c)^2 + 420*(b*x + a)^3*B*a^5*b^2*c^2*d^8*g^3*n/(d*x +
 c)^3 - 15*(b*x + a)^2*B*a^7*b*d^9*g^3*n/(d*x + c)^2 - 140*(b*x + a)^3*B*a^
```

```
6*b*c*d^9*g^3*n/(d*x + c)^3 + 20*(b*x + a)^3*B*a^7*d^10*g^3*n/(d*x + c)^3)*
log((b*x + a)/(d*x + c))/(b^6*d^4 - 6*(b*x + a)*b^5*d^5/(d*x + c) + 15*(b*x
 + a)^2*b^4*d^6/(d*x + c)^2 - 20*(b*x + a)^3*b^3*d^7/(d*x + c)^3 + 15*(b*x
+ a)^4*b^2*d^8/(d*x + c)^4 - 6*(b*x + a)^5*b*d^9/(d*x + c)^5 + (b*x + a)^6*
d^10/(d*x + c)^6) + (2*B*b^12*c^7*g^3*n - 14*B*a*b^11*c^6*d*g^3*n - 6*(b*x
+ a)*B*b^11*c^7*d*g^3*n/(d*x + c) + 42*B*a^2*b^10*c^5*d^2*g^3*n + 42*(b*x +
 a)*B*a*b^10*c^6*d^2*g^3*n/(d*x + c) - 3*(b*x + a)^2*B*b^10*c^7*d^2*g^3*n/(
d*x + c)^2 - 70*B*a^3*b^9*c^4*d^3*g^3*n - 126*(b*x + a)*B*a^2*b^9*c^5*d^3*g
^3*n/(d*x + c) + 21*(b*x + a)^2*B*a*b^9*c^6*d^3*g^3*n/(d*x + c)^2 + 34*(b*x
 + a)^3*B*b^9*c^7*d^3*g^3*n/(d*x + c)^3 + 70*B*a^4*b^8*c^3*d^4*g^3*n + 210*
(b*x + a)*B*a^3*b^8*c^4*d^4*g^3*n/(d*x + c) - 63*(b*x + a)^2*B*a^2*b^8*c^5*
d^4*g^3*n/(d*x + c)^2 - 238*(b*x + a)^3*B*a*b^8*c^6*d^4*g^3*n/(d*x + c)^3 -
 33*(b*x + a)^4*B*b^8*c^7*d^4*g^3*n/(d*x + c)^4 - 42*B*a^5*b^7*c^2*d^5*g^3*
n - 210*(b*x + a)*B*a^4*b^7*c^3*d^5*g^3*n/(d*x + c) + 105*(b*x + a)^2*B*a^3
*b^7*c^4*d^5*g^3*n/(d*x + c)^2 + 714*(b*x + a)^3*B*a^2*b^7*c^5*d^5*g^3*n/(d
*x + c)^3 + 231*(b*x + a)^4*B*a*b^7*c^6*d^5*g^3*n/(d*x + c)^4 + 6*(b*x + a)
^5*B*b^7*c^7*d^5*g^3*n/(d*x + c)^5 + 14*B*a^6*b^6*c*d^6*g^3*n + 126*(b*x +
a)*B*a^5*b^6*c^2*d^6*g^3*n/(d*x + c) - 105*(b*x + a)^2*B*a^4*b^6*c^3*d^6*g^
3*n/(d*x + c)^2 - 1190*(b*x + a)^3*B*a^3*b^6*c^4*d^6*g^3*n/(d*x + c)^3 - 69
3*(b*x + a)^4*B*a^2*b^6*c^5*d^6*g^3*n/(d*x + c)^4 - 42*(b*x + a)^5*B*a*b^6*
c^6*d^6*g^3*n/(d*x + c)^5 - 2*B*a^7*b^5*d^7*g^3*n - 42*(b*x + a)*B*a^6*b^5*
c*d^7*g^3*n/(d*x + c) + 63*(b*x + a)^2*B*a^5*b^5*c^2*d^7*g^3*n/(d*x + c)^2
+ 1190*(b*x + a)^3*B*a^4*b^5*c^3*d^7*g^3*n/(d*x + c)^3 + 1155*(b*x + a)^4*B
*a^3*b^5*c^4*d^7*g^3*n/(d*x + c)^4 + 126*(b*x + a)^5*B*a^2*b^5*c^5*d^7*g^3*
n/(d*x + c)^5 + 6*(b*x + a)*B*a^7*b^4*d^8*g^3*n/(d*x + c) - 21*(b*x + a)^2*
B*a^6*b^4*c*d^8*g^3*n/(d*x + c)^2 - 714*(b*x + a)^3*B*a^5*b^4*c^2*d^8*g^3*n
/(d*x + c)^3 - 1155*(b*x + a)^4*B*a^4*b^4*c^3*d^8*g^3*n/(d*x + c)^4 - 210*(
b*x + a)^5*B*a^3*b^4*c^4*d^8*g^3*n/(d*x + c)^5 + 3*(b*x + a)^2*B*a^7*b^3*d^
9*g^3*n/(d*x + c)^2 + 238*(b*x + a)^3*B*a^6*b^3*c*d^9*g^3*n/(d*x + c)^3 + 6
93*(b*x + a)^4*B*a^5*b^3*c^2*d^9*g^3*n/(d*x + c)^4 + 210*(b*x + a)^5*B*a^4*
b^3*c^3*d^9*g^3*n/(d*x + c)^5 - 34*(b*x + a)^3*B*a^7*b^2*d^10*g^3*n/(d*x +
c)^3 - 231*(b*x + a)^4*B*a^6*b^2*c*d^10*g^3*n/(d*x + c)^4 - 126*(b*x + a)^5
*B*a^5*b^2*c^2*d^10*g^3*n/(d*x + c)^5 + 33*(b*x + a)^4*B*a^7*b*d^11*g^3*n/(
d*x + c)^4 + 42*(b*x + a)^5*B*a^6*b*c*d^11*g^3*n/(d*x + c)^5 - 6*(b*x + a)^
5*B*a^7*d^12*g^3*n/(d*x + c)^5 + 6*A*b^12*c^7*g^3 + 6*B*b^12*c^7*g^3 - 42*A
*a*b^11*c^6*d*g^3 - 42*B*a*b^11*c^6*d*g^3 - 36*(b*x + a)*A*b^11*c^7*d*g^3/(
d*x + c) - 36*(b*x + a)*B*b^11*c^7*d*g^3/(d*x + c) + 126*A*a^2*b^10*c^5*d^2
*g^3 + 126*B*a^2*b^10*c^5*d^2*g^3 + 252*(b*x + a)*A*a*b^10*c^6*d^2*g^3/(d*x
 + c) + 252*(b*x + a)*B*a*b^10*c^6*d^2*g^3/(d*x + c) + 90*(b*x + a)^2*A*b^1
0*c^7*d^2*g^3/(d*x + c)^2 + 90*(b*x + a)^2*B*b^10*c^7*d^2*g^3/(d*x + c)^2 -
 210*A*a^3*b^9*c^4*d^3*g^3 - 210*B*a^3*b^9*c^4*d^3*g^3 - 756*(b*x + a)*A*a^
2*b^9*c^5*d^3*g^3/(d*x + c) - 756*(b*x + a)*B*a^2*b^9*c^5*d^3*g^3/(d*x + c)
 - 630*(b*x + a)^2*A*a*b^9*c^6*d^3*g^3/(d*x + c)^2 - 630*(b*x + a)^2*B*a*b^
9*c^6*d^3*g^3/(d*x + c)^2 - 120*(b*x + a)^3*A*b^9*c^7*d^3*g^3/(d*x + c)^3 -
 120*(b*x + a)^3*B*b^9*c^7*d^3*g^3/(d*x + c)^3 + 210*A*a^4*b^8*c^3*d^4*g^3
+ 210*B*a^4*b^8*c^3*d^4*g^3 + 1260*(b*x + a)*A*a^3*b^8*c^4*d^4*g^3/(d*x + c
) + 1260*(b*x + a)*B*a^3*b^8*c^4*d^4*g^3/(d*x + c) + 1890*(b*x + a)^2*A*a^2
*b^8*c^5*d^4*g^3/(d*x + c)^2 + 1890*(b*x + a)^2*B*a^2*b^8*c^5*d^4*g^3/(d*x
+ c)^2 + 840*(b*x + a)^3*A*a*b^8*c^6*d^4*g^3/(d*x + c)^3 + 840*(b*x + a)^3*
B*a*b^8*c^6*d^4*g^3/(d*x + c)^3 - 126*A*a^5*b^7*c^2*d^5*g^3 - 126*B*a^5*b^7
*c^2*d^5*g^3 - 1260*(b*x + a)*A*a^4*b^7*c^3*d^5*g^3/(d*x + c) - 1260*(b*x +
 a)*B*a^4*b^7*c^3*d^5*g^3/(d*x + c) - 3150*(b*x + a)^2*A*a^3*b^7*c^4*d^5*g^
3/(d*x + c)^2 - 3150*(b*x + a)^2*B*a^3*b^7*c^4*d^5*g^3/(d*x + c)^2 - 2520*(
b*x + a)^3*A*a^2*b^7*c^5*d^5*g^3/(d*x + c)^3 - 2520*(b*x + a)^3*B*a^2*b^7*c
^5*d^5*g^3/(d*x + c)^3 + 42*A*a^6*b^6*c*d^6*g^3 + 42*B*a^6*b^6*c*d^6*g^3 +
756*(b*x + a)*A*a^5*b^6*c^2*d^6*g^3/(d*x + c) + 756*(b*x + a)*B*a^5*b^6*c^2
*d^6*g^3/(d*x + c) + 3150*(b*x + a)^2*A*a^4*b^6*c^3*d^6*g^3/(d*x + c)^2 + 3
150*(b*x + a)^2*B*a^4*b^6*c^3*d^6*g^3/(d*x + c)^2 + 4200*(b*x + a)^3*A*a^3*
b^6*c^4*d^6*g^3/(d*x + c)^3 + 4200*(b*x + a)^3*B*a^3*b^6*c^4*d^6*g^3/(d*x +
```

```
c)^3 - 6*A*a^7*b^5*d^7*g^3 - 6*B*a^7*b^5*d^7*g^3 - 252*(b*x + a)*A*a^6*b^5
*c*d^7*g^3/(d*x + c) - 252*(b*x + a)*B*a^6*b^5*c*d^7*g^3/(d*x + c) - 1890*(
b*x + a)^2*A*a^5*b^5*c^2*d^7*g^3/(d*x + c)^2 - 1890*(b*x + a)^2*B*a^5*b^5*c
^2*d^7*g^3/(d*x + c)^2 - 4200*(b*x + a)^3*A*a^4*b^5*c^3*d^7*g^3/(d*x + c)^3
 - 4200*(b*x + a)^3*B*a^4*b^5*c^3*d^7*g^3/(d*x + c)^3 + 36*(b*x + a)*A*a^7*
b^4*d^8*g^3/(d*x + c) + 36*(b*x + a)*B*a^7*b^4*d^8*g^3/(d*x + c) + 630*(b*x
 + a)^2*A*a^6*b^4*c*d^8*g^3/(d*x + c)^2 + 630*(b*x + a)^2*B*a^6*b^4*c*d^8*g
^3/(d*x + c)^2 + 2520*(b*x + a)^3*A*a^5*b^4*c^2*d^8*g^3/(d*x + c)^3 + 2520*
(b*x + a)^3*B*a^5*b^4*c^2*d^8*g^3/(d*x + c)^3 - 90*(b*x + a)^2*A*a^7*b^3*d^
9*g^3/(d*x + c)^2 - 90*(b*x + a)^2*B*a^7*b^3*d^9*g^3/(d*x + c)^2 - 840*(b*x
 + a)^3*A*a^6*b^3*c*d^9*g^3/(d*x + c)^3 - 840*(b*x + a)^3*B*a^6*b^3*c*d^9*g
^3/(d*x + c)^3 + 120*(b*x + a)^3*A*a^7*b^2*d^10*g^3/(d*x + c)^3 + 120*(b*x
+ a)^3*B*a^7*b^2*d^10*g^3/(d*x + c)^3)/(b^8*d^4 - 6*(b*x + a)*b^7*d^5/(d*x
+ c) + 15*(b*x + a)^2*b^6*d^6/(d*x + c)^2 - 20*(b*x + a)^3*b^5*d^7/(d*x + c
)^3 + 15*(b*x + a)^4*b^4*d^8/(d*x + c)^4 - 6*(b*x + a)^5*b^3*d^9/(d*x + c)^
5 + (b*x + a)^6*b^2*d^10/(d*x + c)^6) + 6*(B*b^7*c^7*g^3*n - 7*B*a*b^6*c^6*
d*g^3*n + 21*B*a^2*b^5*c^5*d^2*g^3*n - 35*B*a^3*b^4*c^4*d^3*g^3*n + 35*B*a^
4*b^3*c^3*d^4*g^3*n - 21*B*a^5*b^2*c^2*d^5*g^3*n + 7*B*a^6*b*c*d^6*g^3*n -
B*a^7*d^7*g^3*n)*log(-b + (b*x + a)*d/(d*x + c))/(b^3*d^4) - 6*(B*b^7*c^7*g
^3*n - 7*B*a*b^6*c^6*d*g^3*n + 21*B*a^2*b^5*c^5*d^2*g^3*n - 35*B*a^3*b^4*c^
4*d^3*g^3*n + 35*B*a^4*b^3*c^3*d^4*g^3*n - 21*B*a^5*b^2*c^2*d^5*g^3*n + 7*B
*a^6*b*c*d^6*g^3*n - B*a^7*d^7*g^3*n)*log((b*x + a)/(d*x + c))/(b^3*d^4))*(
b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{3} (dix+ci)^{2} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [B] time = 1.66, size = 1978, normalized size = 4.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="maxima")
```

```
[Out] 1/6*B*b^3*d^2*g^3*i^2*x^6*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/6*A*b^
3*d^2*g^3*i^2*x^6 + 2/5*B*b^3*c*d*g^3*i^2*x^5*log(e*(b*x/(d*x + c) + a/(d*x
 + c))^n) + 3/5*B*a*b^2*d^2*g^3*i^2*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))
^n) + 2/5*A*b^3*c*d*g^3*i^2*x^5 + 3/5*A*a*b^2*d^2*g^3*i^2*x^5 + 1/4*B*b^3*c
^2*g^3*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*B*a*b^2*c*d*g^3
*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/4*B*a^2*b*d^2*g^3*i^2*x
^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A*b^3*c^2*g^3*i^2*x^4 + 3/2
*A*a*b^2*c*d*g^3*i^2*x^4 + 3/4*A*a^2*b*d^2*g^3*i^2*x^4 + B*a*b^2*c^2*g^3*i^
2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*B*a^2*b*c*d*g^3*i^2*x^3*lo
g(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*B*a^3*d^2*g^3*i^2*x^3*log(e*(b*x
/(d*x + c) + a/(d*x + c))^n) + A*a*b^2*c^2*g^3*i^2*x^3 + 2*A*a^2*b*c*d*g^3*
i^2*x^3 + 1/3*A*a^3*d^2*g^3*i^2*x^3 + 3/2*B*a^2*b*c^2*g^3*i^2*x^2*log(e*(b*
x/(d*x + c) + a/(d*x + c))^n) + B*a^3*c*d*g^3*i^2*x^2*log(e*(b*x/(d*x + c)
+ a/(d*x + c))^n) + 3/2*A*a^2*b*c^2*g^3*i^2*x^2 + A*a^3*c*d*g^3*i^2*x^2 - 1
/360*B*b^3*d^2*g^3*i^2*n*(60*a^6*log(b*x + a)/b^6 - 60*c^6*log(d*x + c)/d^6
 + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 2
0*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^
```

```
5*c^5 - a^5*d^5)*x)/(b^5*d^5)) + 1/30*B*b^3*c*d*g^3*i^2*n*(12*a^5*log(b*x +
 a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4
*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 -
 a^4*d^4)*x)/(b^4*d^4)) + 1/20*B*a*b^2*d^2*g^3*i^2*n*(12*a^5*log(b*x + a)/b
^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*
d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*
d^4)*x)/(b^4*d^4)) - 1/24*B*b^3*c^2*g^3*i^2*n*(6*a^4*log(b*x + a)/b^4 - 6*c
^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b
*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/4*B*a*b^2*c*d*g^3*i^2*n
*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d
^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3
)) - 1/8*B*a^2*b*d^2*g^3*i^2*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)
/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(
b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/2*B*a*b^2*c^2*g^3*i^2*n*(2*a^3*log(b*x
 + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2
- a^2*d^2)*x)/(b^2*d^2)) + B*a^2*b*c*d*g^3*i^2*n*(2*a^3*log(b*x + a)/b^3 -
2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x
)/(b^2*d^2)) + 1/6*B*a^3*d^2*g^3*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(
d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2
)) - 3/2*B*a^2*b*c^2*g^3*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2
 + (b*c - a*d)*x/(b*d)) - B*a^3*c*d*g^3*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*l
og(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*a^3*c^2*g^3*i^2*n*(a*log(b*x + a
)/b - c*log(d*x + c)/d) + B*a^3*c^2*g^3*i^2*x*log(e*(b*x/(d*x + c) + a/(d*x
 + c))^n) + A*a^3*c^2*g^3*i^2*x
```

mupad [B] time = 5.91, size = 2555, normalized size = 5.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)),
x)

[Out] x^2*((a*c*((((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 -
(A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^
3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^2*c^2*n + 60*A*a
*b*c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/(2*b*d) - ((60*a*d + 60*b*
c)*((g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 48
*A*a*b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))
/(4*d) + ((60*a*d + 60*b*c)*((((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*
n - B*b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c)
)/(60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*
b^2*c^2*n + 60*A*a*b*c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/(60*b*d)
 - (a*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b
^2*d*g^3*i^2*(60*a*d + 60*b*c))/60))/(b*d)))/(120*b*d) + (a*g^3*i^2*(3*A*a^
3*d^3 + 12*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 54*A*a*b^2*c^2*d + 36*
A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n))/(6*b*d)) + x^3*((g^
3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 48*A*a*b^
2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))/(12*d)
 + ((60*a*d + 60*b*c)*((((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*
b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*
b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^2*c^
2*n + 60*A*a*b*c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/(180*b*d) - (a
*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b^2*d*
g^3*i^2*(60*a*d + 60*b*c))/60))/(3*b*d)) - x^4*((((b^2*d*g^3*i^2*(24*A*a*d
+ 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60
)*(60*a*d + 60*b*c))/(240*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 +
3*B*a^2*d^2*n - 2*B*b^2*c^2*n + 60*A*a*b*c*d - B*a*b*c*d*n))/20 + (A*a*b^2*
c*d*g^3*i^2)/4) + x^5*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*
c*n))/30 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/300) - x*(((60*a*d + 60*b*c)
```

```
*((a*c*((((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*
b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (b*g^3*i
^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^2*c^2*n + 60*A*a*b*
c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/(b*d) - ((60*a*d + 60*b*c)*((
g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 48*A*a*
b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))/(4*d
) + ((60*a*d + 60*b*c)*((((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B
*b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60
*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^2*c
^2*n + 60*A*a*b*c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/(60*b*d) - (a
*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b^2*d*
g^3*i^2*(60*a*d + 60*b*c))/60))/(b*d)))/(60*b*d) + (a*g^3*i^2*(3*A*a^3*d^3
+ 12*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 54*A*a*b^2*c^2*d + 36*A*a^2*
b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n))/(3*b*d)))/(60*b*d) + (a*c
*((g^3*i^2*(16*A*a^3*d^3 + 4*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 48*A
*a*b^2*c^2*d + 72*A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))/(
4*d) + ((60*a*d + 60*b*c)*((((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n
- B*b*c*n))/6 - (A*b^2*d*g^3*i^2*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/
(60*b*d) - (b*g^3*i^2*(30*A*a^2*d^2 + 15*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^
2*c^2*n + 60*A*a*b*c*d - B*a*b*c*d*n))/5 + A*a*b^2*c*d*g^3*i^2))/(60*b*d) -
 (a*c*((b^2*d*g^3*i^2*(24*A*a*d + 18*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b^2
*d*g^3*i^2*(60*a*d + 60*b*c))/60))/(b*d)))/(b*d) - (a^2*c*g^3*i^2*(6*A*a^2*
d^2 + 12*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^2*c^2*n + 24*A*a*b*c*d + B*a*b*c
*d*n))/(2*b*d)) + log(e*((a + b*x)/(c + d*x))^n)*(B*a^3*c^2*g^3*i^2*x + (B*
a*g^3*i^2*x^3*(a^2*d^2 + 3*b^2*c^2 + 6*a*b*c*d))/3 + (B*b*g^3*i^2*x^4*(3*a^
2*d^2 + b^2*c^2 + 6*a*b*c*d))/4 + (B*b^3*d^2*g^3*i^2*x^6)/6 + (B*a^2*c*g^3*
i^2*x^2*(2*a*d + 3*b*c))/2 + (B*b^2*d*g^3*i^2*x^5*(3*a*d + 2*b*c))/5) + (lo
g(c + d*x)*(B*b^3*c^6*g^3*i^2*n - 20*B*a^3*c^3*d^3*g^3*i^2*n + 15*B*a^2*b*c
^4*d^2*g^3*i^2*n - 6*B*a*b^2*c^5*d*g^3*i^2*n))/(60*d^4) + (log(a + b*x)*(B*
a^6*d^2*g^3*i^2*n + 15*B*a^4*b^2*c^2*g^3*i^2*n - 6*B*a^5*b*c*d*g^3*i^2*n))/
(60*b^3) + (A*b^3*d^2*g^3*i^2*x^6)/6
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
[Out] Timed out
```

3.118 $\int (ag+bgx)^2(ci+dix)^2 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\,dx$

Optimal. Leaf size=352

$$\frac{b^2g^2i^2(c+dx)^5\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{5d^3}+\frac{g^2i^2(c+dx)^3(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3d^3}-\frac{bg^2i^2(c+dx)^4(bc-ad}{}$$

```
[Out] -1/30*B*(-a*d+b*c)^4*g^2*i^2*n*x/b^2/d^2-1/60*B*(-a*d+b*c)^3*g^2*i^2*n*(d*x
+c)^2/b/d^3+1/10*B*(-a*d+b*c)^2*g^2*i^2*n*(d*x+c)^3/d^3-1/20*b*B*(-a*d+b*c)
*g^2*i^2*n*(d*x+c)^4/d^3+1/3*(-a*d+b*c)^2*g^2*i^2*(d*x+c)^3*(A+B*ln(e*((b*x
+a)/(d*x+c))^n))/d^3-1/2*b*(-a*d+b*c)*g^2*i^2*(d*x+c)^4*(A+B*ln(e*((b*x+a)/
(d*x+c))^n))/d^3+1/5*b^2*g^2*i^2*(d*x+c)^5*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/
d^3-1/30*B*(-a*d+b*c)^5*g^2*i^2*n*ln((b*x+a)/(d*x+c))/b^3/d^3-1/30*B*(-a*d+
b*c)^5*g^2*i^2*n*ln(d*x+c)/b^3/d^3
```

Rubi [A] time = 0.54, antiderivative size = 310, normalized size of antiderivative = 0.88, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2g^2i^2(a+bx)^5\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{5b^3}+\frac{g^2i^2(a+bx)^3(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^3}+\frac{dg^2i^2(a+bx)^4(bc-a}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),
x]
```

```
[Out] (B*(b*c - a*d)^4*g^2*i^2*n*x)/(30*b^2*d^2) - (B*(b*c - a*d)^3*g^2*i^2*n*(a
+ b*x)^2)/(60*b^3*d) - (B*(b*c - a*d)^2*g^2*i^2*n*(a + b*x)^3)/(10*b^3) - (
B*d*(b*c - a*d)*g^2*i^2*n*(a + b*x)^4)/(20*b^3) + ((b*c - a*d)^2*g^2*i^2*(a
 + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^3) + (d*(b*c - a*d)*
g^2*i^2*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^3) + (d^2*
g^2*i^2*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(5*b^3) - (B*(b
*c - a*d)^5*g^2*i^2*n*Log[c + d*x])/(30*b^3*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (118c+118dx)^2(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx = \int \left(\frac{(-bc+ad)^2g^2(118c+118dx)^2\left(A+B\log\left(\right.\right.}{d^2}\right.$$

$$= \frac{\left(b^2g^2\right)\int (118c+118dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{13924d^2}$$

$$= \frac{13924(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{3d^3}$$

$$= \frac{13924(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{3d^3}$$

$$= \frac{13924(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{3d^3}$$

$$= -\frac{6962B(bc-ad)^4g^2nx}{15b^2d^2} - \frac{3481B(bc-ad)^3g^2n(}{15bd^3}$$

Mathematica [A] time = 0.28, size = 374, normalized size = 1.06

$$\frac{g^2i^2\left(12d^5(a+bx)^5\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+30d^4(a+bx)^4(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+20d^3(a+bx)^3\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n]),x]
```

```
[Out] (g^2*i^2*(20*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x
))^n]) + 30*d^4*(b*c - a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]) + 12*d^5*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 10*B*(b*c
 - a*d)^3*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c
+ d*x]) - 5*B*(b*c - a*d)^2*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)
*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + B*(b*c -
 a*d)*n*(12*b*d*(b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(
b*c - a*d)*(a + b*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x])
))/(60*b^3*d^3)
```

fricas [B] time = 1.16, size = 774, normalized size = 2.20

$$\frac{12\,Ab^5d^5g^2i^2x^5+2\left(10\,Ba^3b^2c^2d^3-5\,Ba^4bcd^4+Ba^5d^5\right)g^2i^2n\log\left(bx+a\right)-2\left(Bb^5c^5-5\,Bab^4c^4d+10\,Ba^2b^3c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="fricas")
```

```
[Out] 1/60*(12*A*b^5*d^5*g^2*i^2*x^5 + 2*(10*B*a^3*b^2*c^2*d^3 - 5*B*a^4*b*c*d^4
+ B*a^5*d^5)*g^2*i^2*n*log(b*x + a) - 2*(B*b^5*c^5 - 5*B*a*b^4*c^4*d + 10*B
*a^2*b^3*c^3*d^2)*g^2*i^2*n*log(d*x + c) - 3*((B*b^5*c*d^4 - B*a*b^4*d^5)*g
^2*i^2*n - 10*(A*b^5*c*d^4 + A*a*b^4*d^5)*g^2*i^2)*x^4 - 2*(3*(B*b^5*c^2*d^
3 - B*a^2*b^3*d^5)*g^2*i^2*n - 10*(A*b^5*c^2*d^3 + 4*A*a*b^4*c*d^4 + A*a^2*
b^3*d^5)*g^2*i^2)*x^3 - ((B*b^5*c^3*d^2 + 15*B*a*b^4*c^2*d^3 - 15*B*a^2*b^3
*c*d^4 - B*a^3*b^2*d^5)*g^2*i^2*n - 60*(A*a*b^4*c^2*d^3 + A*a^2*b^3*c*d^4)*
g^2*i^2)*x^2 + 2*(30*A*a^2*b^3*c^2*d^3*g^2*i^2 + (B*b^5*c^4*d - 5*B*a*b^4*c
^3*d^2 + 5*B*a^3*b^2*c*d^4 - B*a^4*b*d^5)*g^2*i^2*n)*x + 2*(6*B*b^5*d^5*g^2
*i^2*x^5 + 30*B*a^2*b^3*c^2*d^3*g^2*i^2*x + 15*(B*b^5*c*d^4 + B*a*b^4*d^5)*
g^2*i^2*x^4 + 10*(B*b^5*c^2*d^3 + 4*B*a*b^4*c*d^4 + B*a^2*b^3*d^5)*g^2*i^2*
x^3 + 30*(B*a*b^4*c^2*d^3 + B*a^2*b^3*c*d^4)*g^2*i^2*x^2)*log(e) + 2*(6*B*b
^5*d^5*g^2*i^2*n*x^5 + 30*B*a^2*b^3*c^2*d^3*g^2*i^2*n*x + 15*(B*b^5*c*d^4 +
 B*a*b^4*d^5)*g^2*i^2*n*x^4 + 10*(B*b^5*c^2*d^3 + 4*B*a*b^4*c*d^4 + B*a^2*b
^3*d^5)*g^2*i^2*n*x^3 + 30*(B*a*b^4*c^2*d^3 + B*a^2*b^3*c*d^4)*g^2*i^2*n*x^
2)*log((b*x + a)/(d*x + c)))/(b^3*d^3)
```

giac [B] time = 7.34, size = 2995, normalized size = 8.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="giac")
```

```
[Out] -1/60*(2*(B*b^8*c^6*g^2*n - 6*B*a*b^7*c^5*d*g^2*n - 5*(b*x + a)*B*b^7*c^6*d
*g^2*n/(d*x + c) + 15*B*a^2*b^6*c^4*d^2*g^2*n + 30*(b*x + a)*B*a*b^6*c^5*d^
2*g^2*n/(d*x + c) + 10*(b*x + a)^2*B*b^6*c^6*d^2*g^2*n/(d*x + c)^2 - 20*B*a
^3*b^5*c^3*d^3*g^2*n - 75*(b*x + a)*B*a^2*b^5*c^4*d^3*g^2*n/(d*x + c) - 60*
(b*x + a)^2*B*a*b^5*c^5*d^3*g^2*n/(d*x + c)^2 + 15*B*a^4*b^4*c^2*d^4*g^2*n
+ 100*(b*x + a)*B*a^3*b^4*c^3*d^4*g^2*n/(d*x + c) + 150*(b*x + a)^2*B*a^2*b
^4*c^4*d^4*g^2*n/(d*x + c)^2 - 6*B*a^5*b^3*c*d^5*g^2*n - 75*(b*x + a)*B*a^4
*b^3*c^2*d^5*g^2*n/(d*x + c) - 200*(b*x + a)^2*B*a^3*b^3*c^3*d^5*g^2*n/(d*x
 + c)^2 + B*a^6*b^2*d^6*g^2*n + 30*(b*x + a)*B*a^5*b^2*c*d^6*g^2*n/(d*x + c
) + 150*(b*x + a)^2*B*a^4*b^2*c^2*d^6*g^2*n/(d*x + c)^2 - 5*(b*x + a)*B*a^6
*b*d^7*g^2*n/(d*x + c) - 60*(b*x + a)^2*B*a^5*b*c*d^7*g^2*n/(d*x + c)^2 + 1
0*(b*x + a)^2*B*a^6*d^8*g^2*n/(d*x + c)^2)*log((b*x + a)/(d*x + c))/(b^5*d^
3 - 5*(b*x + a)*b^4*d^4/(d*x + c) + 10*(b*x + a)^2*b^3*d^5/(d*x + c)^2 - 10
*(b*x + a)^3*b^2*d^6/(d*x + c)^3 + 5*(b*x + a)^4*b*d^7/(d*x + c)^4 - (b*x +
 a)^5*d^8/(d*x + c)^5) + (2*(b*x + a)*B*b^9*c^6*d*g^2*n/(d*x + c) - 12*(b*x
 + a)*B*a*b^8*c^5*d^2*g^2*n/(d*x + c) - 9*(b*x + a)^2*B*b^8*c^6*d^2*g^2*n/(
d*x + c)^2 + 30*(b*x + a)*B*a^2*b^7*c^4*d^3*g^2*n/(d*x + c) + 54*(b*x + a)^
2*B*a*b^7*c^5*d^3*g^2*n/(d*x + c)^2 + 9*(b*x + a)^3*B*b^7*c^6*d^3*g^2*n/(d*
x + c)^3 - 40*(b*x + a)*B*a^3*b^6*c^3*d^4*g^2*n/(d*x + c) - 135*(b*x + a)^2
*B*a^2*b^6*c^4*d^4*g^2*n/(d*x + c)^2 - 54*(b*x + a)^3*B*a*b^6*c^5*d^4*g^2*n
/(d*x + c)^3 - 2*(b*x + a)^4*B*b^6*c^6*d^4*g^2*n/(d*x + c)^4 + 30*(b*x + a)
*B*a^4*b^5*c^2*d^5*g^2*n/(d*x + c) + 180*(b*x + a)^2*B*a^3*b^5*c^3*d^5*g^2*
n/(d*x + c)^2 + 135*(b*x + a)^3*B*a^2*b^5*c^4*d^5*g^2*n/(d*x + c)^3 + 12*(b
*x + a)^4*B*a*b^5*c^5*d^5*g^2*n/(d*x + c)^4 - 12*(b*x + a)*B*a^5*b^4*c*d^6*
g^2*n/(d*x + c) - 135*(b*x + a)^2*B*a^4*b^4*c^2*d^6*g^2*n/(d*x + c)^2 - 180
*(b*x + a)^3*B*a^3*b^4*c^3*d^6*g^2*n/(d*x + c)^3 - 30*(b*x + a)^4*B*a^2*b^4
*c^4*d^6*g^2*n/(d*x + c)^4 + 2*(b*x + a)*B*a^6*b^3*d^7*g^2*n/(d*x + c) + 54
*(b*x + a)^2*B*a^5*b^3*c*d^7*g^2*n/(d*x + c)^2 + 135*(b*x + a)^3*B*a^4*b^3*
c^2*d^7*g^2*n/(d*x + c)^3 + 40*(b*x + a)^4*B*a^3*b^3*c^3*d^7*g^2*n/(d*x + c
)^4 - 9*(b*x + a)^2*B*a^6*b^2*d^8*g^2*n/(d*x + c)^2 - 54*(b*x + a)^3*B*a^5*
b^2*c*d^8*g^2*n/(d*x + c)^3 - 30*(b*x + a)^4*B*a^4*b^2*c^2*d^8*g^2*n/(d*x +
 c)^4 + 9*(b*x + a)^3*B*a^6*b*d^9*g^2*n/(d*x + c)^3 + 12*(b*x + a)^4*B*a^5*
```

```
b*c*d^9*g^2*n/(d*x + c)^4 - 2*(b*x + a)^4*B*a^6*d^10*g^2*n/(d*x + c)^4 + 2*
A*b^10*c^6*g^2 + 2*B*b^10*c^6*g^2 - 12*A*a*b^9*c^5*d*g^2 - 12*B*a*b^9*c^5*d
*g^2 - 10*(b*x + a)*A*b^9*c^6*d*g^2/(d*x + c) - 10*(b*x + a)*B*b^9*c^6*d*g^
2/(d*x + c) + 30*A*a^2*b^8*c^4*d^2*g^2 + 30*B*a^2*b^8*c^4*d^2*g^2 + 60*(b*x
 + a)*A*a*b^8*c^5*d^2*g^2/(d*x + c) + 60*(b*x + a)*B*a*b^8*c^5*d^2*g^2/(d*x
 + c) + 20*(b*x + a)^2*A*b^8*c^6*d^2*g^2/(d*x + c)^2 + 20*(b*x + a)^2*B*b^8
*c^6*d^2*g^2/(d*x + c)^2 - 40*A*a^3*b^7*c^3*d^3*g^2 - 40*B*a^3*b^7*c^3*d^3*
g^2 - 150*(b*x + a)*A*a^2*b^7*c^4*d^3*g^2/(d*x + c) - 150*(b*x + a)*B*a^2*b
^7*c^4*d^3*g^2/(d*x + c) - 120*(b*x + a)^2*A*a*b^7*c^5*d^3*g^2/(d*x + c)^2
- 120*(b*x + a)^2*B*a*b^7*c^5*d^3*g^2/(d*x + c)^2 + 30*A*a^4*b^6*c^2*d^4*g^
2 + 30*B*a^4*b^6*c^2*d^4*g^2 + 200*(b*x + a)*A*a^3*b^6*c^3*d^4*g^2/(d*x + c
) + 200*(b*x + a)*B*a^3*b^6*c^3*d^4*g^2/(d*x + c) + 300*(b*x + a)^2*A*a^2*b
^6*c^4*d^4*g^2/(d*x + c)^2 + 300*(b*x + a)^2*B*a^2*b^6*c^4*d^4*g^2/(d*x + c
)^2 - 12*A*a^5*b^5*c*d^5*g^2 - 12*B*a^5*b^5*c*d^5*g^2 - 150*(b*x + a)*A*a^4
*b^5*c^2*d^5*g^2/(d*x + c) - 150*(b*x + a)*B*a^4*b^5*c^2*d^5*g^2/(d*x + c)
- 400*(b*x + a)^2*A*a^3*b^5*c^3*d^5*g^2/(d*x + c)^2 - 400*(b*x + a)^2*B*a^3
*b^5*c^3*d^5*g^2/(d*x + c)^2 + 2*A*a^6*b^4*d^6*g^2 + 2*B*a^6*b^4*d^6*g^2 +
60*(b*x + a)*A*a^5*b^4*c*d^6*g^2/(d*x + c) + 60*(b*x + a)*B*a^5*b^4*c*d^6*g
^2/(d*x + c) + 300*(b*x + a)^2*A*a^4*b^4*c^2*d^6*g^2/(d*x + c)^2 + 300*(b*x
 + a)^2*B*a^4*b^4*c^2*d^6*g^2/(d*x + c)^2 - 10*(b*x + a)*A*a^6*b^3*d^7*g^2/
(d*x + c) - 10*(b*x + a)*B*a^6*b^3*d^7*g^2/(d*x + c) - 120*(b*x + a)^2*A*a^
5*b^3*c*d^7*g^2/(d*x + c)^2 - 120*(b*x + a)^2*B*a^5*b^3*c*d^7*g^2/(d*x + c)
^2 + 20*(b*x + a)^2*A*a^6*b^2*d^8*g^2/(d*x + c)^2 + 20*(b*x + a)^2*B*a^6*b^
2*d^8*g^2/(d*x + c)^2)/(b^7*d^3 - 5*(b*x + a)*b^6*d^4/(d*x + c) + 10*(b*x +
 a)^2*b^5*d^5/(d*x + c)^2 - 10*(b*x + a)^3*b^4*d^6/(d*x + c)^3 + 5*(b*x + a
)^4*b^3*d^7/(d*x + c)^4 - (b*x + a)^5*b^2*d^8/(d*x + c)^5) + 2*(B*b^6*c^6*g
^2*n - 6*B*a*b^5*c^5*d*g^2*n + 15*B*a^2*b^4*c^4*d^2*g^2*n - 20*B*a^3*b^3*c^
3*d^3*g^2*n + 15*B*a^4*b^2*c^2*d^4*g^2*n - 6*B*a^5*b*c*d^5*g^2*n + B*a^6*d^
6*g^2*n)*log(b - (b*x + a)*d/(d*x + c))/(b^3*d^3) - 2*(B*b^6*c^6*g^2*n - 6*
B*a*b^5*c^5*d*g^2*n + 15*B*a^2*b^4*c^4*d^2*g^2*n - 20*B*a^3*b^3*c^3*d^3*g^2
*n + 15*B*a^4*b^2*c^2*d^4*g^2*n - 6*B*a^5*b*c*d^5*g^2*n + B*a^6*d^6*g^2*n)*
log((b*x + a)/(d*x + c))/(b^3*d^3))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{2} (dix+ci)^{2} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [B] time = 1.43, size = 1336, normalized size = 3.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="maxima")
```

```
[Out] 1/5*B*b^2*d^2*g^2*i^2*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/5*A*b^
2*d^2*g^2*i^2*x^5 + 1/2*B*b^2*c*d*g^2*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d*x
 + c))^n) + 1/2*B*a*b*d^2*g^2*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n
) + 1/2*A*b^2*c*d*g^2*i^2*x^4 + 1/2*A*a*b*d^2*g^2*i^2*x^4 + 1/3*B*b^2*c^2*g
^2*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 4/3*B*a*b*c*d*g^2*i^2*x
^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*B*a^2*d^2*g^2*i^2*x^3*log(e
*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*A*b^2*c^2*g^2*i^2*x^3 + 4/3*A*a*b*c
*d*g^2*i^2*x^3 + 1/3*A*a^2*d^2*g^2*i^2*x^3 + B*a*b*c^2*g^2*i^2*x^2*log(e*(b
```

```
*x/(d*x + c) + a/(d*x + c))^n) + B*a^2*c*d*g^2*i^2*x^2*log(e*(b*x/(d*x + c)
 + a/(d*x + c))^n) + A*a*b*c^2*g^2*i^2*x^2 + A*a^2*c*d*g^2*i^2*x^2 + 1/60*B
*b^2*d^2*g^2*i^2*n*(12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*
(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^
3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) - 1/12*B*b^2*c*
d*g^2*i^2*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^
2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*
x)/(b^3*d^3)) - 1/12*B*a*b*d^2*g^2*i^2*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*lo
g(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)
*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/6*B*b^2*c^2*g^2*i^2*n*(2*a^3
*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(
b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 2/3*B*a*b*c*d*g^2*i^2*n*(2*a^3*log(b*x +
 a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 -
a^2*d^2)*x)/(b^2*d^2)) + 1/6*B*a^2*d^2*g^2*i^2*n*(2*a^3*log(b*x + a)/b^3 -
2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x
)/(b^2*d^2)) - B*a*b*c^2*g^2*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)
/d^2 + (b*c - a*d)*x/(b*d)) - B*a^2*c*d*g^2*i^2*n*(a^2*log(b*x + a)/b^2 - c
^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*a^2*c^2*g^2*i^2*n*(a*log(b*x
 + a)/b - c*log(d*x + c)/d) + B*a^2*c^2*g^2*i^2*x*log(e*(b*x/(d*x + c) + a/
(d*x + c))^n) + A*a^2*c^2*g^2*i^2*x
```

mupad [B] time = 5.14, size = 1328, normalized size = 3.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)),
x)
```

```
[Out] x^2*(((30*a*d + 30*b*c)*((((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d*n - B*
b*c*n))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/30)*(30*a*d + 30*b*c))/(30*b*
d) - (g^2*i^2*(6*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 18*A
*a*b*c*d))/2 + A*a*b*c*d*g^2*i^2))/(60*b*d) - (a*c*((b*d*g^2*i^2*(15*A*a*d
+ 15*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/30))
/(2*b*d) + (g^2*i^2*(3*A*a^3*d^3 + 3*A*b^3*c^3 + B*a^3*d^3*n - B*b^3*c^3*n
+ 27*A*a*b^2*c^2*d + 27*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2
*n))/(6*b*d)) + log(e*((a + b*x)/(c + d*x))^n)*((B*g^2*i^2*x^3*(a^2*d^2 + b
^2*c^2 + 4*a*b*c*d))/3 + B*a^2*c^2*g^2*i^2*x + (B*b^2*d^2*g^2*i^2*x^5)/5 +
B*a*c*g^2*i^2*x^2*(a*d + b*c) + (B*b*d*g^2*i^2*x^4*(a*d + b*c))/2) - x^3*((
((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b*d*g^2*i^2
*(30*a*d + 30*b*c))/30)*(30*a*d + 30*b*c))/(90*b*d) - (g^2*i^2*(6*A*a^2*d^2
 + 6*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 18*A*a*b*c*d))/6 + (A*a*b*c*d*
g^2*i^2)/3) + x*((a*c*((((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d*n - B*b*
c*n))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/30)*(30*a*d + 30*b*c))/(30*b*d)
 - (g^2*i^2*(6*A*a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 18*A*a
*b*c*d))/2 + A*a*b*c*d*g^2*i^2))/(b*d) - ((30*a*d + 30*b*c)*(((30*a*d + 30*
b*c)*((((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*b*d*
g^2*i^2*(30*a*d + 30*b*c))/30)*(30*a*d + 30*b*c))/(30*b*d) - (g^2*i^2*(6*A*
a^2*d^2 + 6*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 18*A*a*b*c*d))/2 + A*a*
b*c*d*g^2*i^2))/(30*b*d) - (a*c*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d*
n - B*b*c*n))/5 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/30))/(b*d) + (g^2*i^2*(
3*A*a^3*d^3 + 3*A*b^3*c^3 + B*a^3*d^3*n - B*b^3*c^3*n + 27*A*a*b^2*c^2*d +
27*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))/(3*b*d)))/(30*b*
d) + (a*c*g^2*i^2*(3*A*a^2*d^2 + 3*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n +
9*A*a*b*c*d))/(b*d)) + x^4*((b*d*g^2*i^2*(15*A*a*d + 15*A*b*c + B*a*d*n - B
*b*c*n))/20 - (A*b*d*g^2*i^2*(30*a*d + 30*b*c))/120) + (log(a + b*x)*(B*a^5
*d^2*g^2*i^2*n + 10*B*a^3*b^2*c^2*g^2*i^2*n - 5*B*a^4*b*c*d*g^2*i^2*n))/(30
*b^3) - (log(c + d*x)*(B*b^2*c^5*g^2*i^2*n + 10*B*a^2*c^3*d^2*g^2*i^2*n - 5
*B*a*b*c^4*d*g^2*i^2*n))/(30*d^3) + (A*b^2*d^2*g^2*i^2*x^5)/5
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
[Out] Timed out
```

3.119 $\int (ag+bgx)(ci+dix)^2 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx$

Optimal. Leaf size=250

$$-\frac{gi^2(c+dx)^3(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3d^2}+\frac{bgi^2(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4d^2}+\frac{Bgi^2n(bc-ad)^4\log\left(\frac{a+b}{c+d}\right.}{12b^3d^2}$$

```
[Out] 1/12*B*(-a*d+b*c)^3*g*i^2*n*x/b^2/d+1/24*B*(-a*d+b*c)^2*g*i^2*n*(d*x+c)^2/b
/d^2-1/12*B*(-a*d+b*c)*g*i^2*n*(d*x+c)^3/d^2-1/3*(-a*d+b*c)*g*i^2*(d*x+c)^3
*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^2+1/4*b*g*i^2*(d*x+c)^4*(A+B*ln(e*((b*x+
a)/(d*x+c))^n))/d^2+1/12*B*(-a*d+b*c)^4*g*i^2*n*ln((b*x+a)/(d*x+c))/b^3/d^2
+1/12*B*(-a*d+b*c)^4*g*i^2*n*ln(d*x+c)/b^3/d^2
```

Rubi [A] time = 0.35, antiderivative size = 210, normalized size of antiderivative = 0.84, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.098, Rules used = {2528, 2525, 12, 43}

$$-\frac{gi^2(c+dx)^3(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3d^2}+\frac{bgi^2(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4d^2}+\frac{Bgi^2n(bc-ad)^4\log(a+}{12b^3d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] (B*(b*c - a*d)^3*g*i^2*n*x)/(12*b^2*d) + (B*(b*c - a*d)^2*g*i^2*n*(c + d*x)
^2)/(24*b*d^2) - (B*(b*c - a*d)*g*i^2*n*(c + d*x)^3)/(12*d^2) + (B*(b*c - a
*d)^4*g*i^2*n*Log[a + b*x])/(12*b^3*d^2) - ((b*c - a*d)*g*i^2*(c + d*x)^3*(
A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*d^2) + (b*g*i^2*(c + d*x)^4*(A +
B*Log[e*((a + b*x)/(c + d*x))^n]))/(4*d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (119c+119dx)^2(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx=\int\left(\frac{(-bc+ad)g(119c+119dx)^2\left(A+B\log\left(e\left(\right.\right.\right.}{d}\right.$$

$$=\frac{(bg)\int(119c+119dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{119d}$$

$$=-\frac{14161(bc-ad)g(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{3d^2}$$

$$=-\frac{14161(bc-ad)g(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{3d^2}$$

$$=-\frac{14161(bc-ad)g(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{3d^2}$$

$$=\frac{14161B(bc-ad)^3gnx}{12b^2d}+\frac{14161B(bc-ad)^2gn(c-}{24bd^2}$$

Mathematica [A] time = 0.20, size = 224, normalized size = 0.90

$$\frac{gi^2\left(6b(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-8(c+dx)^3(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+\frac{4Bn(bc-ad)^2(2bdx(bc-ad)+}{}\right.}{24d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]),x]
```

```
[Out] (g*i^2*((4*B*(b*c - a*d)^2*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*
c - a*d)^2*Log[a + b*x]))/b^3 - (B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3
*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a +
b*x]))/b^3 - 8*(b*c - a*d)*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n
]) + 6*b*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])))/(24*d^2)
```

fricas [B] time = 0.83, size = 530, normalized size = 2.12

$$\frac{6\,Ab^4d^4gi^2x^4+2\left(6\,Ba^2b^2c^2d^2-4\,Ba^3bcd^3+Ba^4d^4\right)gi^2n\log(bx+a)+2\left(Bb^4c^4-4\,Bab^3c^3d\right)gi^2n\log(dx+c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="fricas")
```

```
[Out] 1/24*(6*A*b^4*d^4*g*i^2*x^4 + 2*(6*B*a^2*b^2*c^2*d^2 - 4*B*a^3*b*c*d^3 + B*
a^4*d^4)*g*i^2*n*log(b*x + a) + 2*(B*b^4*c^4 - 4*B*a*b^3*c^3*d)*g*i^2*n*log
(d*x + c) - 2*((B*b^4*c*d^3 - B*a*b^3*d^4)*g*i^2*n - 4*(2*A*b^4*c*d^3 + A*a
*b^3*d^4)*g*i^2)*x^3 - ((5*B*b^4*c^2*d^2 - 4*B*a*b^3*c*d^3 - B*a^2*b^2*d^4)
*g*i^2*n - 12*(A*b^4*c^2*d^2 + 2*A*a*b^3*c*d^3)*g*i^2)*x^2 + 2*(12*A*a*b^3*
c^2*d^2*g*i^2 - (B*b^4*c^3*d + 2*B*a*b^3*c^2*d^2 - 4*B*a^2*b^2*c*d^3 + B*a^
3*b*d^4)*g*i^2*n)*x + 2*(3*B*b^4*d^4*g*i^2*x^4 + 12*B*a*b^3*c^2*d^2*g*i^2*x
```

```
 + 4*(2*B*b^4*c*d^3 + B*a*b^3*d^4)*g*i^2*x^3 + 6*(B*b^4*c^2*d^2 + 2*B*a*b^3
*c*d^3)*g*i^2*x^2)*log(e) + 2*(3*B*b^4*d^4*g*i^2*n*x^4 + 12*B*a*b^3*c^2*d^2
*g*i^2*n*x + 4*(2*B*b^4*c*d^3 + B*a*b^3*d^4)*g*i^2*n*x^3 + 6*(B*b^4*c^2*d^2
 + 2*B*a*b^3*c*d^3)*g*i^2*n*x^2)*log((b*x + a)/(d*x + c)))/(b^3*d^2)
```

giac [B] time = 3.88, size = 1757, normalized size = 7.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="giac")
```

```
[Out] 1/24*(2*(B*b^6*c^5*g*n - 5*B*a*b^5*c^4*d*g*n - 4*(b*x + a)*B*b^5*c^5*d*g*n/
(d*x + c) + 10*B*a^2*b^4*c^3*d^2*g*n + 20*(b*x + a)*B*a*b^4*c^4*d^2*g*n/(d*
x + c) - 10*B*a^3*b^3*c^2*d^3*g*n - 40*(b*x + a)*B*a^2*b^3*c^3*d^3*g*n/(d*x
 + c) + 5*B*a^4*b^2*c*d^4*g*n + 40*(b*x + a)*B*a^3*b^2*c^2*d^4*g*n/(d*x + c
) - B*a^5*b*d^5*g*n - 20*(b*x + a)*B*a^4*b*c*d^5*g*n/(d*x + c) + 4*(b*x + a
)*B*a^5*d^6*g*n/(d*x + c))*log((b*x + a)/(d*x + c))/(b^4*d^2 - 4*(b*x + a)*
b^3*d^3/(d*x + c) + 6*(b*x + a)^2*b^2*d^4/(d*x + c)^2 - 4*(b*x + a)^3*b*d^5
/(d*x + c)^3 + (b*x + a)^4*d^6/(d*x + c)^4) - (B*b^8*c^5*g*n - 5*B*a*b^7*c^
4*d*g*n - 6*(b*x + a)*B*b^7*c^5*d*g*n/(d*x + c) + 10*B*a^2*b^6*c^3*d^2*g*n
+ 30*(b*x + a)*B*a*b^6*c^4*d^2*g*n/(d*x + c) + 7*(b*x + a)^2*B*b^6*c^5*d^2*
g*n/(d*x + c)^2 - 10*B*a^3*b^5*c^2*d^3*g*n - 60*(b*x + a)*B*a^2*b^5*c^3*d^3
*g*n/(d*x + c) - 35*(b*x + a)^2*B*a*b^5*c^4*d^3*g*n/(d*x + c)^2 - 2*(b*x +
a)^3*B*b^5*c^5*d^3*g*n/(d*x + c)^3 + 5*B*a^4*b^4*c*d^4*g*n + 60*(b*x + a)*B
*a^3*b^4*c^2*d^4*g*n/(d*x + c) + 70*(b*x + a)^2*B*a^2*b^4*c^3*d^4*g*n/(d*x
+ c)^2 + 10*(b*x + a)^3*B*a*b^4*c^4*d^4*g*n/(d*x + c)^3 - B*a^5*b^3*d^5*g*n
 - 30*(b*x + a)*B*a^4*b^3*c*d^5*g*n/(d*x + c) - 70*(b*x + a)^2*B*a^3*b^3*c^
2*d^5*g*n/(d*x + c)^2 - 20*(b*x + a)^3*B*a^2*b^3*c^3*d^5*g*n/(d*x + c)^3 +
6*(b*x + a)*B*a^5*b^2*d^6*g*n/(d*x + c) + 35*(b*x + a)^2*B*a^4*b^2*c*d^6*g*
n/(d*x + c)^2 + 20*(b*x + a)^3*B*a^3*b^2*c^2*d^6*g*n/(d*x + c)^3 - 7*(b*x +
 a)^2*B*a^5*b*d^7*g*n/(d*x + c)^2 - 10*(b*x + a)^3*B*a^4*b*c*d^7*g*n/(d*x +
 c)^3 + 2*(b*x + a)^3*B*a^5*d^8*g*n/(d*x + c)^3 - 2*A*b^8*c^5*g - 2*B*b^8*c
^5*g + 10*A*a*b^7*c^4*d*g + 10*B*a*b^7*c^4*d*g + 8*(b*x + a)*A*b^7*c^5*d*g/
(d*x + c) + 8*(b*x + a)*B*b^7*c^5*d*g/(d*x + c) - 20*A*a^2*b^6*c^3*d^2*g -
20*B*a^2*b^6*c^3*d^2*g - 40*(b*x + a)*A*a*b^6*c^4*d^2*g/(d*x + c) - 40*(b*x
 + a)*B*a*b^6*c^4*d^2*g/(d*x + c) + 20*A*a^3*b^5*c^2*d^3*g + 20*B*a^3*b^5*c
^2*d^3*g + 80*(b*x + a)*A*a^2*b^5*c^3*d^3*g/(d*x + c) + 80*(b*x + a)*B*a^2*
b^5*c^3*d^3*g/(d*x + c) - 10*A*a^4*b^4*c*d^4*g - 10*B*a^4*b^4*c*d^4*g - 80*
(b*x + a)*A*a^3*b^4*c^2*d^4*g/(d*x + c) - 80*(b*x + a)*B*a^3*b^4*c^2*d^4*g/
(d*x + c) + 2*A*a^5*b^3*d^5*g + 2*B*a^5*b^3*d^5*g + 40*(b*x + a)*A*a^4*b^3*
c*d^5*g/(d*x + c) + 40*(b*x + a)*B*a^4*b^3*c*d^5*g/(d*x + c) - 8*(b*x + a)*
A*a^5*b^2*d^6*g/(d*x + c) - 8*(b*x + a)*B*a^5*b^2*d^6*g/(d*x + c))/(b^6*d^2
 - 4*(b*x + a)*b^5*d^3/(d*x + c) + 6*(b*x + a)^2*b^4*d^4/(d*x + c)^2 - 4*(b
*x + a)^3*b^3*d^5/(d*x + c)^3 + (b*x + a)^4*b^2*d^6/(d*x + c)^4) + 2*(B*b^5
*c^5*g*n - 5*B*a*b^4*c^4*d*g*n + 10*B*a^2*b^3*c^3*d^2*g*n - 10*B*a^3*b^2*c^
2*d^3*g*n + 5*B*a^4*b*c*d^4*g*n - B*a^5*d^5*g*n)*log(-b + (b*x + a)*d/(d*x
+ c))/(b^3*d^2) - 2*(B*b^5*c^5*g*n - 5*B*a*b^4*c^4*d*g*n + 10*B*a^2*b^3*c^3
*d^2*g*n - 10*B*a^3*b^2*c^2*d^3*g*n + 5*B*a^4*b*c*d^4*g*n - B*a^5*d^5*g*n)*
log((b*x + a)/(d*x + c))/(b^3*d^2))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \left(bgx + ag\right) \left(dix + ci\right)^{2} \left(B \ln \left(e \left(\frac{bx + a}{dx + c}\right)^{n}\right) + A\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [B] time = 1.37, size = 740, normalized size = 2.96

$$\frac{1}{4} Bbd^2gi^2x^4 \log\left(e\left(\frac{bx}{dx+c} + \frac{a}{dx+c}\right)^n\right) + \frac{1}{4} Abd^2gi^2x^4 + \frac{2}{3} Bbcdgi^2x^3 \log\left(e\left(\frac{bx}{dx+c} + \frac{a}{dx+c}\right)^n\right) + \frac{1}{3} Bad^2gi^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="maxima")
```

```
[Out] 1/4*B*b*d^2*g*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A*b*d^2*
g*i^2*x^4 + 2/3*B*b*c*d*g*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) +
1/3*B*a*d^2*g*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2/3*A*b*c*d*
g*i^2*x^3 + 1/3*A*a*d^2*g*i^2*x^3 + 1/2*B*b*c^2*g*i^2*x^2*log(e*(b*x/(d*x +
 c) + a/(d*x + c))^n) + B*a*c*d*g*i^2*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c
))^n) + 1/2*A*b*c^2*g*i^2*x^2 + A*a*c*d*g*i^2*x^2 - 1/24*B*b*d^2*g*i^2*n*(6
*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)
*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))
+ 1/3*B*b*c*d*g*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((
b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 1/6*B*a*d^2*
g*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*
d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 1/2*B*b*c^2*g*i^2*n*(a^2*l
og(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - B*a*c*d*g*i
^2*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) +
B*a*c^2*g*i^2*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + B*a*c^2*g*i^2*x*log
(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*a*c^2*g*i^2*x
```

mupad [B] time = 5.15, size = 661, normalized size = 2.64

$$\ln\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\left(B\,a\,c^2\,g\,i^2\,x + \frac{B\,c\,g\,i^2\,x^2\,(2\,a\,d+b\,c)}{2} + \frac{B\,d\,g\,i^2\,x^3\,(a\,d+2\,b\,c)}{3} + \frac{B\,b\,d^2\,g\,i^2\,x^4}{4}\right) + x^3\left(\frac{d\,g\,i^2\,(8}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)
```

```
[Out] log(e*((a + b*x)/(c + d*x))^n)*(B*a*c^2*g*i^2*x + (B*c*g*i^2*x^2*(2*a*d + b
*c))/2 + (B*d*g*i^2*x^3*(a*d + 2*b*c))/3 + (B*b*d^2*g*i^2*x^4)/4) + x^3*((d
*g*i^2*(8*A*a*d + 12*A*b*c + B*a*d*n - B*b*c*n))/12 - (A*d*g*i^2*(12*a*d +
12*b*c))/36) + x*(((12*a*d + 12*b*c)*((((d*g*i^2*(8*A*a*d + 12*A*b*c + B*a*
d*n - B*b*c*n))/4 - (A*d*g*i^2*(12*a*d + 12*b*c))/12)*(12*a*d + 12*b*c))/(1
2*b*d) - (g*i^2*(3*A*a^2*d^2 + 9*A*b^2*c^2 + B*a^2*d^2*n - 2*B*b^2*c^2*n +
18*A*a*b*c*d + B*a*b*c*d*n))/(3*b) + A*a*c*d*g*i^2))/(12*b*d) - (a*c*((d*g*
i^2*(8*A*a*d + 12*A*b*c + B*a*d*n - B*b*c*n))/4 - (A*d*g*i^2*(12*a*d + 12*b
*c))/12))/(b*d) + (c*g*i^2*(6*A*a^2*d^2 + 2*A*b^2*c^2 + 2*B*a^2*d^2*n - B*b
^2*c^2*n + 12*A*a*b*c*d - B*a*b*c*d*n))/(2*b*d)) - x^2*((((d*g*i^2*(8*A*a*d
 + 12*A*b*c + B*a*d*n - B*b*c*n))/4 - (A*d*g*i^2*(12*a*d + 12*b*c))/12)*(12
*a*d + 12*b*c))/(24*b*d) - (g*i^2*(3*A*a^2*d^2 + 9*A*b^2*c^2 + B*a^2*d^2*n
- 2*B*b^2*c^2*n + 18*A*a*b*c*d + B*a*b*c*d*n))/(6*b) + (A*a*c*d*g*i^2)/2) +
 (log(c + d*x)*(B*b*c^4*g*i^2*n - 4*B*a*c^3*d*g*i^2*n))/(12*d^2) + (log(a +
 b*x)*(B*a^4*d^2*g*i^2*n + 6*B*a^2*b^2*c^2*g*i^2*n - 4*B*a^3*b*c*d*g*i^2*n)
)/(12*b^3) + (A*b*d^2*g*i^2*x^4)/4
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Timed out
```

3.120 $\int (ci+dix)^2 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx$

Optimal. Leaf size=124

$$\frac{i^2(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3d}-\frac{Bi^2n(bc-ad)^3\log(a+bx)}{3b^3d}-\frac{Bi^2nx(bc-ad)^2}{3b^2}-\frac{Bi^2n(c+dx)^2(bc-ad)}{6bd}$$

```
[Out] -1/3*B*(-a*d+b*c)^2*i^2*n*x/b^2-1/6*B*(-a*d+b*c)*i^2*n*(d*x+c)^2/b/d-1/3*B*
(-a*d+b*c)^3*i^2*n*ln(b*x+a)/b^3/d+1/3*i^2*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*
x+c))^n))/d
```

Rubi [A] time = 0.07, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2525, 12, 43}

$$\frac{i^2(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3d}-\frac{Bi^2nx(bc-ad)^2}{3b^2}-\frac{Bi^2n(bc-ad)^3\log(a+bx)}{3b^3d}-\frac{Bi^2n(c+dx)^2(bc-ad)}{6bd}$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] -(B*(b*c - a*d)^2*i^2*n*x)/(3*b^2) - (B*(b*c - a*d)*i^2*n*(c + d*x)^2)/(6*b
*d) - (B*(b*c - a*d)^3*i^2*n*Log[a + b*x])/(3*b^3*d) + (i^2*(c + d*x)^3*(A
+ B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\int (120c+120dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx = \frac{4800(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{d} - \frac{(Bn)\int \frac{1728000(bc-ad)}{a+bx}}{360d}$$
$$= \frac{4800(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{d} - \frac{(4800B(bc-ad)n)}{d}$$
$$= \frac{4800(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{d} - $$
$$= -\frac{4800B(bc-ad)^2nx}{b^2} - \frac{2400B(bc-ad)n(c+dx)^2}{bd} - \frac{4800B(b}{}$$

Mathematica [**A**] time = 0.05, size = 101, normalized size = 0.81

$$\frac{i^2\left((c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-\frac{Bn(bc-ad)\left(2bdx(bc-ad)+2(bc-ad)^2\log(a+bx)+b^2(c+dx)^2\right)}{2b^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] (i^2*(-1/2*(B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c
 - a*d)^2*Log[a + b*x]))/b^3 + (c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x
))^n])))/(3*d)
```

fricas [**B**] time = 0.89, size = 297, normalized size = 2.40

$$\frac{2\,Ab^3d^3i^2x^3 - 2\,Bb^3c^3i^2n\log(dx+c) + 2\left(3\,Bab^2c^2d - 3\,Ba^2bcd^2 + Ba^3d^3\right)i^2n\log(bx+a) + \left(6\,Ab^3cd^2i^2 - \left(Bb^3c\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fric
as")
```

```
[Out] 1/6*(2*A*b^3*d^3*i^2*x^3 - 2*B*b^3*c^3*i^2*n*log(d*x + c) + 2*(3*B*a*b^2*c^
2*d - 3*B*a^2*b*c*d^2 + B*a^3*d^3)*i^2*n*log(b*x + a) + (6*A*b^3*c*d^2*i^2
- (B*b^3*c*d^2 - B*a*b^2*d^3)*i^2*n)*x^2 + 2*(3*A*b^3*c^2*d*i^2 - (2*B*b^3*
c^2*d - 3*B*a*b^2*c*d^2 + B*a^2*b*d^3)*i^2*n)*x + 2*(B*b^3*d^3*i^2*x^3 + 3*
B*b^3*c*d^2*i^2*x^2 + 3*B*b^3*c^2*d*i^2*x)*log(e) + 2*(B*b^3*d^3*i^2*n*x^3
+ 3*B*b^3*c*d^2*i^2*n*x^2 + 3*B*b^3*c^2*d*i^2*n*x)*log((b*x + a)/(d*x + c))
)/(b^3*d)
```

giac [**B**] time = 1.60, size = 860, normalized size = 6.94

$$-\frac{1}{6}\left(\frac{2\left(Bb^4c^4n - 4\,Bab^3c^3dn + 6\,Ba^2b^2c^2d^2n - 4\,Ba^3bcd^3n + Ba^4d^4n\right)\log\left(\frac{bx+a}{dx+c}\right)}{b^3d - \frac{3\,(bx+a)b^2d^2}{dx+c} + \frac{3\,(bx+a)^2bd^3}{(dx+c)^2} - \frac{(bx+a)^3d^4}{(dx+c)^3}} - \frac{3\,Bb^6c^4n - 12\,Bab^5c^3dn - \frac{5\,(b}{}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac
")
```

```
[Out] -1/6*(2*(B*b^4*c^4*n - 4*B*a*b^3*c^3*d*n + 6*B*a^2*b^2*c^2*d^2*n - 4*B*a^3*
b*c*d^3*n + B*a^4*d^4*n)*log((b*x + a)/(d*x + c))/(b^3*d - 3*(b*x + a)*b^2*
d^2/(d*x + c) + 3*(b*x + a)^2*b*d^3/(d*x + c)^2 - (b*x + a)^3*d^4/(d*x + c)
^3) - (3*B*b^6*c^4*n - 12*B*a*b^5*c^3*d*n - 5*(b*x + a)*B*b^5*c^4*d*n/(d*x
+ c) + 18*B*a^2*b^4*c^2*d^2*n + 20*(b*x + a)*B*a*b^4*c^3*d^2*n/(d*x + c) +
2*(b*x + a)^2*B*b^4*c^4*d^2*n/(d*x + c)^2 - 12*B*a^3*b^3*c*d^3*n - 30*(b*x
+ a)*B*a^2*b^3*c^2*d^3*n/(d*x + c) - 8*(b*x + a)^2*B*a*b^3*c^3*d^3*n/(d*x +
 c)^2 + 3*B*a^4*b^2*d^4*n + 20*(b*x + a)*B*a^3*b^2*c*d^4*n/(d*x + c) + 12*(
b*x + a)^2*B*a^2*b^2*c^2*d^4*n/(d*x + c)^2 - 5*(b*x + a)*B*a^4*b*d^5*n/(d*x
 + c) - 8*(b*x + a)^2*B*a^3*b*c*d^5*n/(d*x + c)^2 + 2*(b*x + a)^2*B*a^4*d^6
*n/(d*x + c)^2 - 2*A*b^6*c^4 - 2*B*b^6*c^4 + 8*A*a*b^5*c^3*d + 8*B*a*b^5*c^
3*d - 12*A*a^2*b^4*c^2*d^2 - 12*B*a^2*b^4*c^2*d^2 + 8*A*a^3*b^3*c*d^3 + 8*B
*a^3*b^3*c*d^3 - 2*A*a^4*b^2*d^4 - 2*B*a^4*b^2*d^4)/(b^5*d - 3*(b*x + a)*b^
4*d^2/(d*x + c) + 3*(b*x + a)^2*b^3*d^3/(d*x + c)^2 - (b*x + a)^3*b^2*d^4/(
d*x + c)^3) + 2*(B*b^4*c^4*n - 4*B*a*b^3*c^3*d*n + 6*B*a^2*b^2*c^2*d^2*n -
4*B*a^3*b*c*d^3*n + B*a^4*d^4*n)*log(b - (b*x + a)*d/(d*x + c))/(b^3*d) - 2
*(B*b^4*c^4*n - 4*B*a*b^3*c^3*d*n + 6*B*a^2*b^2*c^2*d^2*n - 4*B*a^3*b*c*d^3
*n + B*a^4*d^4*n)*log((b*x + a)/(d*x + c))/(b^3*d))*(b*c/(b*c - a*d)^2 - a*
d/(b*c - a*d)^2)
```

maple [F] time = 0.29, size = 0, normalized size = 0.00

$$\int (dix+ci)^2 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [B] time = 1.18, size = 309, normalized size = 2.49

$$\frac{1}{3}Bd^2i^2x^3\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^n\right)+\frac{1}{3}Ad^2i^2x^3+Bcdi^2x^2\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^n\right)+Acdi^2x^2+\frac{1}{6}Bd^2i^2n\Bigg(\frac{2a}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxi
ma")
```

```
[Out] 1/3*B*d^2*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*A*d^2*i^2*x^
3 + B*c*d*i^2*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*c*d*i^2*x^2 +
1/6*B*d^2*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*
d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - B*c*d*i^2*n*(a^2*l
og(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*c^2*i^2*n
*(a*log(b*x + a)/b - c*log(d*x + c)/d) + B*c^2*i^2*x*log(e*(b*x/(d*x + c) +
 a/(d*x + c))^n) + A*c^2*i^2*x
```

mupad [B] time = 4.62, size = 303, normalized size = 2.44

$$\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\left(B\,c^2\,i^2\,x+B\,c\,d\,i^2\,x^2+\frac{B\,d^2\,i^2\,x^3}{3}\right)-x\left(\frac{(3\,a\,d+3\,b\,c)\,\left(\frac{d\,i^2\,(3\,A\,a\,d+9\,A\,b\,c+B\,a\,d\,n-B\,b\,c\,n)}{3\,b}-\frac{A\,d\,i^2\,(3\,a\ldots}{3\,b}\ldots\right.}{3\,b\,d}\ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)
```

```
[Out] log(e*((a + b*x)/(c + d*x))^n)*((B*d^2*i^2*x^3)/3 + B*c^2*i^2*x + B*c*d*i^2
*x^2) - x*(((3*a*d + 3*b*c)*((d*i^2*(3*A*a*d + 9*A*b*c + B*a*d*n - B*b*c*n)
```

```
)/(3*b) - (A*d*i^2*(3*a*d + 3*b*c))/(3*b)))/(3*b*d) - (c*i^2*(3*A*a*d + 3*A
*b*c + B*a*d*n - B*b*c*n))/b + (A*a*c*d*i^2)/b) + x^2*((d*i^2*(3*A*a*d + 9*
A*b*c + B*a*d*n - B*b*c*n))/(6*b) - (A*d*i^2*(3*a*d + 3*b*c))/(6*b)) + (log
(a + b*x)*(B*a^3*d^2*i^2*n + 3*B*a*b^2*c^2*i^2*n - 3*B*a^2*b*c*d*i^2*n))/(3
*b^3) + (A*d^2*i^2*x^3)/3 - (B*c^3*i^2*n*log(c + d*x))/(3*d)
```

sympy [A] time = 58.61, size = 779, normalized size = 6.28

$$\begin{cases} c^2i^2x\left(A + B\log\left(e\left(\frac{a}{c}\right)^n\right)\right) \\ Ac^2i^2x + Acdi^2x^2 + \frac{Ad^2i^2x^3}{3} - \frac{Bc^3i^2n\log(c+dx)}{3d} + Bc^2i^2nx\log(a) - Bc^2i^2nx\log(c+dx) + \frac{Bc^2i^2nx}{3} + Bc^2i^2x\log(e) + \\ c^2i^2\left(Ax + \frac{Ban\log\left(\frac{a}{c}+\frac{bx}{c}\right)}{b} + Bnx\log\left(\frac{a}{c}+\frac{bx}{c}\right) - Bnx + Bx\log(e)\right) \\ Ac^2i^2x + Acdi^2x^2 + \frac{Ad^2i^2x^3}{3} + \frac{Ba^3d^2i^2n\log\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)}{3b^3} + \frac{Ba^3d^2i^2n\log\left(\frac{c}{d}+x\right)}{3b^3} - \frac{Ba^2cdi^2n\log\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)}{b^2} - \frac{Ba^2cdi^2n\log\left(\frac{c}{d}+x\right)}{b^2} - \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Piecewise((c**2*i**2*x*(A + B*log(e*(a/c)**n)), Eq(b, 0) & Eq(d, 0)), (A*c*
*2*i**2*x + A*c*d*i**2*x**2 + A*d**2*i**2*x**3/3 - B*c**3*i**2*n*log(c + d*
x)/(3*d) + B*c**2*i**2*n*x*log(a) - B*c**2*i**2*n*x*log(c + d*x) + B*c**2*i
**2*n*x/3 + B*c**2*i**2*x*log(e) + B*c*d*i**2*n*x**2*log(a) - B*c*d*i**2*n*
x**2*log(c + d*x) + B*c*d*i**2*n*x**2/3 + B*c*d*i**2*x**2*log(e) + B*d**2*i
**2*n*x**3*log(a)/3 - B*d**2*i**2*n*x**3*log(c + d*x)/3 + B*d**2*i**2*n*x**
3/9 + B*d**2*i**2*x**3*log(e)/3, Eq(b, 0)), (c**2*i**2*(A*x + B*a*n*log(a/c
 + b*x/c)/b + B*n*x*log(a/c + b*x/c) - B*n*x + B*x*log(e)), Eq(d, 0)), (A*c
**2*i**2*x + A*c*d*i**2*x**2 + A*d**2*i**2*x**3/3 + B*a**3*d**2*i**2*n*log(
a/(c + d*x) + b*x/(c + d*x))/(3*b**3) + B*a**3*d**2*i**2*n*log(c/d + x)/(3*
b**3) - B*a**2*c*d*i**2*n*log(a/(c + d*x) + b*x/(c + d*x))/b**2 - B*a**2*c*
d*i**2*n*log(c/d + x)/b**2 - B*a**2*d**2*i**2*n*x/(3*b**2) + B*a*c**2*i**2*
n*log(a/(c + d*x) + b*x/(c + d*x))/b + B*a*c**2*i**2*n*log(c/d + x)/b + B*a
*c*d*i**2*n*x/b + B*a*d**2*i**2*n*x**2/(6*b) - B*c**3*i**2*n*log(c/d + x)/(
3*d) + B*c**2*i**2*n*x*log(a/(c + d*x) + b*x/(c + d*x)) - 2*B*c**2*i**2*n*x
/3 + B*c**2*i**2*x*log(e) + B*c*d*i**2*n*x**2*log(a/(c + d*x) + b*x/(c + d*
x)) - B*c*d*i**2*n*x**2/6 + B*c*d*i**2*x**2*log(e) + B*d**2*i**2*n*x**3*log
(a/(c + d*x) + b*x/(c + d*x))/3 + B*d**2*i**2*x**3*log(e)/3, True))
```

3.121 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ag+bgx}\,dx$

Optimal. Leaf size=289

$$\frac{di^2(a+bx)(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g}-\frac{i^2(bc-ad)^2\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g}+\frac{i^2(c+dx}{}$$

```
[Out] -1/2*B*d*(-a*d+b*c)*i^2*n*x/b^2/g+d*(-a*d+b*c)*i^2*(b*x+a)*(A+B*ln(e*((b*x+
a)/(d*x+c))^n))/b^3/g+1/2*i^2*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b/g
-1/2*B*(-a*d+b*c)^2*i^2*n*ln((b*x+a)/(d*x+c))/b^3/g-3/2*B*(-a*d+b*c)^2*i^2*
n*ln(d*x+c)/b^3/g-(-a*d+b*c)^2*i^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(
d*x+c)/d/(b*x+a))/b^3/g+B*(-a*d+b*c)^2*i^2*n*polylog(2,b*(d*x+c)/d/(b*x+a))
/b^3/g
```

Rubi [A] time = 0.49, antiderivative size = 369, normalized size of antiderivative = 1.28, number of steps used = 18, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.302, Rules used = {2528, 2486, 31, 2524, 2418, 2390, 12, 2301, 2394, 2393, 2391, 2525, 43}

$$\frac{Bi^2n(bc-ad)^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^3g}+\frac{i^2(bc-ad)^2\log(ag+bgx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g}+\frac{Adi^2x(bc-ad)}{b^2g}+\frac{i^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x),
x]
```

```
[Out] (A*d*(b*c - a*d)*i^2*x)/(b^2*g) - (B*d*(b*c - a*d)*i^2*n*x)/(2*b^2*g) - (B*
(b*c - a*d)^2*i^2*n*Log[a + b*x])/(2*b^3*g) - (B*(b*c - a*d)^2*i^2*n*Log[g*
(a + b*x)]^2)/(2*b^3*g) + (B*d*(b*c - a*d)*i^2*(a + b*x)*Log[e*((a + b*x)/(
c + d*x))^n])/(b^3*g) + (i^2*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))
^n]))/(2*b*g) - (B*(b*c - a*d)^2*i^2*n*Log[c + d*x])/(b^3*g) + ((b*c - a*d)
^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[a*g + b*g*x])/(b^3*g) + (
B*(b*c - a*d)^2*i^2*n*Log[(b*(c + d*x))/(b*c - a*d)]*Log[a*g + b*g*x])/(b^3
*g) + (B*(b*c - a*d)^2*i^2*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3
*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(121c+121dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ag+bgx}\,dx = \int \left(\frac{14641d(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g} + \frac{121d(121c+$$

$$= \frac{\left(14641(bc-ad)^2\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{ag+bgx}\,dx}{b^2} + \frac{(121d)\int(121c+1$$

$$= \frac{14641Ad(bc-ad)x}{b^2g} + \frac{14641(c+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{2bg}$$

$$= \frac{14641Ad(bc-ad)x}{b^2g} + \frac{14641Bd(bc-ad)(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.}{b^3g}$$

$$= \frac{14641Ad(bc-ad)x}{b^2g} + \frac{14641Bd(bc-ad)(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.}{b^3g}$$

$$= \frac{14641Ad(bc-ad)x}{b^2g} - \frac{14641Bd(bc-ad)nx}{2b^2g} - \frac{14641B(bc-a}{2}$$

$$= \frac{14641Ad(bc-ad)x}{b^2g} - \frac{14641Bd(bc-ad)nx}{2b^2g} - \frac{14641B(bc-a}{2}$$

$$= \frac{14641Ad(bc-ad)x}{b^2g} - \frac{14641Bd(bc-ad)nx}{2b^2g} - \frac{14641B(bc-a}{2}$$

Mathematica [A] time = 0.20, size = 264, normalized size = 0.91

$$\frac{i^2\left(b^2(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2(bc-ad)^2\log(g(a+bx))\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2Abdx(bc-ad\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b
*g*x),x]
```

```
[Out] (i^2*(2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*n*(b*d*x + (b*c - a*d)*Log[a +
b*x]) + 2*B*d*(b*c - a*d)*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + b^2*(c
 + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*(b*c - a*d)^2*Log[g*(a
 + b*x)]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*B*(b*c - a*d)^2*n*Log[c
```

```
 + d*x] + B*(b*c - a*d)^2*n*(-(Log[g*(a + b*x)]*(Log[g*(a + b*x)] - 2*Log[(
b*(c + d*x))/(b*c - a*d)])) + 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))
/(2*b^3*g)
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^2i^2x^2 + 2\,Acdi^2x + Ac^2i^2 + \left(Bd^2i^2x^2 + 2\,Bcdi^2x + Bc^2i^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{bgx + ag}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g),x, alg
orithm="fricas")
```

```
[Out] integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*
c*d*i^2*x + B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n))/(b*g*x + a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g),x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)}{bgx + ag}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g),x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g),x)
```

maxima [B] time = 5.31, size = 580, normalized size = 2.01

$$2\,Acdi^2\left(\frac{x}{bg} - \frac{a\log(bx+a)}{b^2g}\right) + \frac{1}{2}\,Ad^2i^2\left(\frac{2\,a^2\log(bx+a)}{b^3g} + \frac{bx^2 - 2\,ax}{b^2g}\right) + \frac{Ac^2i^2\log\left(bgx+ag\right)}{bg} - \frac{\left(3\,bc^2i^2n - 2\,acd\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g),x, alg
orithm="maxima")
```

```
[Out] 2*A*c*d*i^2*(x/(b*g) - a*log(b*x + a)/(b^2*g)) + 1/2*A*d^2*i^2*(2*a^2*log(b
*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A*c^2*i^2*log(b*g*x + a*g)/(b*
g) - 1/2*(3*b*c^2*i^2*n - 2*a*c*d*i^2*n)*B*log(d*x + c)/(b^2*g) + (b^2*c^2*
i^2*n - 2*a*b*c*d*i^2*n + a^2*d^2*i^2*n)*(log(b*x + a)*log((b*d*x + a*d)/(b
*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^3*g) + 1/2*(B*b^2*
d^2*i^2*x^2*log(e) - (b^2*c^2*i^2*n - 2*a*b*c*d*i^2*n + a^2*d^2*i^2*n)*B*lo
g(b*x + a)^2 - ((i^2*n - 4*i^2*log(e))*b^2*c*d - (i^2*n - 2*i^2*log(e))*a*b
*d^2)*B*x + (2*b^2*c^2*i^2*log(e) + 4*(i^2*n - i^2*log(e))*a*b*c*d - (3*i^2
*n - 2*i^2*log(e))*a^2*d^2)*B*log(b*x + a) + (B*b^2*d^2*i^2*x^2 + 2*(2*b^2*
c*d*i^2 - a*b*d^2*i^2)*B*x + 2*(b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*
```

```
B*log(b*x + a))*log((b*x + a)^n) - (B*b^2*d^2*i^2*x^2 + 2*(2*b^2*c*d*i^2 -
a*b*d^2*i^2)*B*x + 2*(b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*B*log(b*x
+ a))*log((d*x + c)^n))/(b^3*g)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{a\,g+b\,g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x),
x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x),
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g),x)
```

```
[Out] Timed out
```

3.122 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=259

$$\frac{d^2i^2(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g^2}-\frac{2di^2(bc-ad)\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g^2}-\frac{i^2(c+dx)(bc-ad)}{b^2g}$$

```
[Out] -B*(-a*d+b*c)*i^2*n*(d*x+c)/b^2/g^2/(b*x+a)+d^2*i^2*(b*x+a)*(A+B*ln(e*((b*x
+a)/(d*x+c))^n))/b^3/g^2-(-a*d+b*c)*i^2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))
^n))/b^2/g^2/(b*x+a)-B*d*(-a*d+b*c)*i^2*n*ln(d*x+c)/b^3/g^2-2*d*(-a*d+b*c)*
i^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^2+2*B*d
*(-a*d+b*c)*i^2*n*polylog(2,b*(d*x+c)/d/(b*x+a))/b^3/g^2
```

Rubi [A] time = 0.52, antiderivative size = 327, normalized size of antiderivative = 1.26, number of steps used = 17, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.302, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{2Bdi^2n(bc-ad)\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^3g^2}+\frac{2di^2(bc-ad)\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g^2}-\frac{i^2(bc-ad)^2\left(B\log\left(e\right.\right.}{b^3g^2(a+}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^
2,x]
```

```
[Out] (A*d^2*i^2*x)/(b^2*g^2) - (B*(b*c - a*d)^2*i^2*n)/(b^3*g^2*(a + b*x)) - (B*
d*(b*c - a*d)*i^2*n*Log[a + b*x])/(b^3*g^2) - (B*d*(b*c - a*d)*i^2*n*Log[a
+ b*x]^2)/(b^3*g^2) + (B*d^2*i^2*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/
(b^3*g^2) - ((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^3
*g^2*(a + b*x)) + (2*d*(b*c - a*d)*i^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)
/(c + d*x))^n]))/(b^3*g^2) + (2*B*d*(b*c - a*d)*i^2*n*Log[a + b*x]*Log[(b*(
c + d*x))/(b*c - a*d)])/(b^3*g^2) + (2*B*d*(b*c - a*d)*i^2*n*PolyLog[2, -((
d*(a + b*x))/(b*c - a*d))])/(b^3*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(122c+122dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^2}\,dx = \int\left(\frac{14884d^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^2}+\frac{14884(bc-ad)^2\left(A+B\right.}{b^2g^2(a+}\right.$$

$$=\frac{\left(14884d^2\right)\int\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx}{b^2g^2}+\frac{(29768d(bc-ad))\int}{b^2}$$

$$=\frac{14884Ad^2x}{b^2g^2}-\frac{14884(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^3g^2(a+bx)}+\frac{2976}{}$$

$$=\frac{14884Ad^2x}{b^2g^2}+\frac{14884Bd^2(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^3g^2}-\frac{14884(bc-}{}$$

$$=\frac{14884Ad^2x}{b^2g^2}+\frac{14884Bd^2(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^3g^2}-\frac{14884(bc-}{}$$

$$=\frac{14884Ad^2x}{b^2g^2}-\frac{14884B(bc-ad)^2n}{b^3g^2(a+bx)}-\frac{14884Bd(bc-ad)n\log(a}{b^3g^2}$$

$$=\frac{14884Ad^2x}{b^2g^2}-\frac{14884B(bc-ad)^2n}{b^3g^2(a+bx)}-\frac{14884Bd(bc-ad)n\log(a}{b^3g^2}$$

$$=\frac{14884Ad^2x}{b^2g^2}-\frac{14884B(bc-ad)^2n}{b^3g^2(a+bx)}-\frac{14884Bd(bc-ad)n\log(a}{b^3g^2}$$

Mathematica [A] time = 0.25, size = 233, normalized size = 0.90

$$i^2\left(2d(bc-ad)\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-\frac{(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{a+bx}+Bd^2(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+Bd\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b
*g*x)^2,x]
```

```
[Out] (i^2*(A*b*d^2*x - (B*(b*c - a*d)^2*n)/(a + b*x) + B*d*(-(b*c) + a*d)*n*Log[
a + b*x] + B*d^2*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - ((b*c - a*d)^2*
(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) + 2*d*(b*c - a*d)*Log[a +
 b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + B*d*(-(b*c) + a*d)*n*(Log[a
+ b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*
(a + b*x))/(-(b*c) + a*d)])))/(b^3*g^2)
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^2i^2x^2 + 2\,Acdi^2x + Ac^2i^2 + \left(Bd^2i^2x^2 + 2\,Bcdi^2x + Bc^2i^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{b^2g^2x^2 + 2\,abg^2x + a^2g^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, a
lgorithm="fricas")
```

```
[Out] integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*
c*d*i^2*x + B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n))/(b^2*g^2*x^2 + 2*a*b
*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)}{\left(bgx + ag\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)
```

maxima [B] time = 4.35, size = 1190, normalized size = 4.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, a
lgorithm="maxima")
```

```
[Out] -B*c^2*i^2*n*(1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2
) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2)) - A*(a^2/(b^4*g^2*x + a*b^3*g^2)
- x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g^2))*d^2*i^2 + 2*A*c*d*i^2*(a/(b^3*g
^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2)) - B*c^2*i^2*log(e*(b*x/(d*x + c
) + a/(d*x + c))^n)/(b^2*g^2*x + a*b*g^2) - A*c^2*i^2/(b^2*g^2*x + a*b*g^2)
 - (b^2*c^2*d*i^2*n + a*b*c*d^2*i^2*n - a^2*d^3*i^2*n)*B*log(d*x + c)/(b^4*
c*g^2 - a*b^3*d*g^2) + ((b^3*c*d^2*i^2*log(e) - a*b^2*d^3*i^2*log(e))*B*x^2
 + (a*b^2*c*d^2*i^2*log(e) - a^2*b*d^3*i^2*log(e))*B*x - ((b^3*c^2*d*i^2*n
- 2*a*b^2*c*d^2*i^2*n + a^2*b*d^3*i^2*n)*B*x + (a*b^2*c^2*d*i^2*n - 2*a^2*b
*c*d^2*i^2*n + a^3*d^3*i^2*n)*B)*log(b*x + a)^2 + (2*(i^2*n + i^2*log(e))*a
*b^2*c^2*d - 3*(i^2*n + i^2*log(e))*a^2*b*c*d^2 + (i^2*n + i^2*log(e))*a^3*
d^3)*B + ((2*b^3*c^2*d*i^2*log(e) + (3*i^2*n - 4*i^2*log(e))*a*b^2*c*d^2 -
2*(i^2*n - i^2*log(e))*a^2*b*d^3)*B*x + (2*a*b^2*c^2*d*i^2*log(e) + (3*i^2*
```

```
n - 4*i^2*log(e))*a^2*b*c*d^2 - 2*(i^2*n - i^2*log(e))*a^3*d^3)*B)*log(b*x
+ a) + ((b^3*c*d^2*i^2 - a*b^2*d^3*i^2)*B*x^2 + (a*b^2*c*d^2*i^2 - a^2*b*d^
3*i^2)*B*x + (2*a*b^2*c^2*d*i^2 - 3*a^2*b*c*d^2*i^2 + a^3*d^3*i^2)*B + 2*((
b^3*c^2*d*i^2 - 2*a*b^2*c*d^2*i^2 + a^2*b*d^3*i^2)*B*x + (a*b^2*c^2*d*i^2 -
 2*a^2*b*c*d^2*i^2 + a^3*d^3*i^2)*B)*log(b*x + a))*log((b*x + a)^n) - ((b^3
*c*d^2*i^2 - a*b^2*d^3*i^2)*B*x^2 + (a*b^2*c*d^2*i^2 - a^2*b*d^3*i^2)*B*x +
 (2*a*b^2*c^2*d*i^2 - 3*a^2*b*c*d^2*i^2 + a^3*d^3*i^2)*B + 2*((b^3*c^2*d*i^
2 - 2*a*b^2*c*d^2*i^2 + a^2*b*d^3*i^2)*B*x + (a*b^2*c^2*d*i^2 - 2*a^2*b*c*d
^2*i^2 + a^3*d^3*i^2)*B)*log(b*x + a))*log((d*x + c)^n))/(a*b^4*c*g^2 - a^2
*b^3*d*g^2 + (b^5*c*g^2 - a*b^4*d*g^2)*x) + 2*(b*c*d*i^2*n - a*d^2*i^2*n)*(
log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c
 - a*d)))*B/(b^3*g^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{{\left(a\,g+b\,g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
2,x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**2,x)
```

```
[Out] Timed out
```

3.123 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^3}\,dx$

Optimal. Leaf size=242

$$-\frac{d^2i^2\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g^3}-\frac{di^2(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g^3(a+bx)}-\frac{i^2(c+dx)^2\left(B\log\left(e\left(\frac{a+}{c+}\right.\right.\right.}{2bg^3(a+bx)^2}$$

```
[Out] -B*d*i^2*n*(d*x+c)/b^2/g^3/(b*x+a)-1/4*B*i^2*n*(d*x+c)^2/b/g^3/(b*x+a)^2-d*
i^2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^3/(b*x+a)-1/2*i^2*(d*x+c)
^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b/g^3/(b*x+a)^2-d^2*i^2*(A+B*ln(e*((b*x+
a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^3+B*d^2*i^2*n*polylog(2,b*(
d*x+c)/d/(b*x+a))/b^3/g^3
```

Rubi [A] time = 0.56, antiderivative size = 354, normalized size of antiderivative = 1.46, number of steps used = 18, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^2i^2n\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^3g^3}+\frac{d^2i^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g^3}-\frac{2di^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right.}{b^3g^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^
3,x]
```

```
[Out] -(B*(b*c - a*d)^2*i^2*n)/(4*b^3*g^3*(a + b*x)^2) - (3*B*d*(b*c - a*d)*i^2*n
)/(2*b^3*g^3*(a + b*x)) - (3*B*d^2*i^2*n*Log[a + b*x])/(2*b^3*g^3) - (B*d^2
*i^2*n*Log[a + b*x]^2)/(2*b^3*g^3) - ((b*c - a*d)^2*i^2*(A + B*Log[e*((a +
b*x)/(c + d*x))^n]))/(2*b^3*g^3*(a + b*x)^2) - (2*d*(b*c - a*d)*i^2*(A + B*
Log[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^3*(a + b*x)) + (d^2*i^2*Log[a + b*x
]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^3) + (3*B*d^2*i^2*n*Log[c
+ d*x])/(2*b^3*g^3) + (B*d^2*i^2*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*
d)])/(b^3*g^3) + (B*d^2*i^2*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^
3*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
```

```
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(123c+123dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^3}\,dx = \int \left(\frac{15129(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^3(a+bx)^3} + \frac{30258d(bc-\right.$$

$$= \frac{\left(15129d^2\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}dx}{b^2g^3} + \frac{(30258d(bc-ad))\int \frac{A+B\,l}{}}{b^2g^3}$$

$$= -\frac{15129(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{2b^3g^3(a+bx)^2} - \frac{30258d(bc-ac}{b}$$

$$= -\frac{15129(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{2b^3g^3(a+bx)^2} - \frac{30258d(bc-ac}{b}$$

$$= -\frac{15129(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{2b^3g^3(a+bx)^2} - \frac{30258d(bc-ac}{b}$$

$$= -\frac{15129B(bc-ad)^2n}{4b^3g^3(a+bx)^2} - \frac{45387Bd(bc-ad)n}{2b^3g^3(a+bx)} - \frac{45387Bd^2n\,lo}{2b^3g^3}$$

$$= -\frac{15129B(bc-ad)^2n}{4b^3g^3(a+bx)^2} - \frac{45387Bd(bc-ad)n}{2b^3g^3(a+bx)} - \frac{45387Bd^2n\,lo}{2b^3g^3}$$

$$= -\frac{15129B(bc-ad)^2n}{4b^3g^3(a+bx)^2} - \frac{45387Bd(bc-ad)n}{2b^3g^3(a+bx)} - \frac{45387Bd^2n\,lo}{2b^3g^3}$$

Mathematica [A] time = 0.35, size = 258, normalized size = 1.07

$$i^2\left(4d^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) + \frac{8d(ad-bc)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{a+bx} - \frac{2(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{(a+bx)^2} - 2Bd^2n\left(lo\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b
*g*x)^3,x]
```

```
[Out] (i^2*(-((B*(b*c - a*d)^2*n)/(a + b*x)^2) + (6*B*d*(-(b*c) + a*d)*n)/(a + b*
x) - 6*B*d^2*n*Log[a + b*x] - (2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c +
 d*x))^n]))/(a + b*x)^2 + (8*d*(-(b*c) + a*d)*(A + B*Log[e*((a + b*x)/(c +
d*x))^n]))/(a + b*x) + 4*d^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n]) + 6*B*d^2*n*Log[c + d*x] - 2*B*d^2*n*(Log[a + b*x]*(Log[a + b*x] - 2*
Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)
])))/(4*b^3*g^3)
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^2i^2x^2 + 2\,Acdi^2x + Ac^2i^2 + \left(Bd^2i^2x^2 + 2\,Bcdi^2x + Bc^2i^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{b^3g^3x^3 + 3\,ab^2g^3x^2 + 3\,a^2bg^3x + a^3g^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, a
lgorithm="fricas")
```

```
[Out] integral((A*d^2*i^2*x^2 + 2*A*c*d*i^2*x + A*c^2*i^2 + (B*d^2*i^2*x^2 + 2*B*
c*d*i^2*x + B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n))/(b^3*g^3*x^3 + 3*a*b
^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^2\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)}{\left(bgx+ag\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,Bcdi^2n\left(\frac{3\,abc-a^2d+2\left(2\,b^2c-abd\right)x}{\left(b^5c-ab^4d\right)g^3x^2+2\left(ab^4c-a^2b^3d\right)g^3x+\left(a^2b^3c-a^3b^2d\right)g^3}+\frac{2\left(2\,bcd-ad^2\right)\log\left(bx+a\right)}{\left(b^4c^2-2\,ab^3cd+a^2b^2d^2\right)g^3}-\frac{2\left(2\,bc\right.}{\left(b^4c^2-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, a
lgorithm="maxima")
```

```
[Out] -1/2*B*c*d*i^2*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4
*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3)
+ 2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g
^3) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^
2)*g^3)) + 1/4*B*c^2*i^2*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*
x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*lo
g(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)/(
(b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3)) + 1/2*A*d^2*i^2*((4*a*b*x + 3*a^2
)/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*log(b*x + a)/(b^3*g^3)) +
 1/2*B*d^2*i^2*(((4*a*b*x + 3*a^2 + 2*(b^2*x^2 + 2*a*b*x + a^2)*log(b*x + a
))*log((b*x + a)^n) - (4*a*b*x + 3*a^2 + 2*(b^2*x^2 + 2*a*b*x + a^2)*log(b*
x + a))*log((d*x + c)^n))/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*i
ntegrate(1/2*(2*b^3*d*x^3*log(e) + 2*b^3*c*x^2*log(e) - 3*a^2*b*c*n + 3*a^3
*d*n - 4*(a*b^2*c*n - a^2*b*d*n)*x - 2*(a^2*b*c*n - a^3*d*n + (b^3*c*n - a*
b^2*d*n)*x^2 + 2*(a*b^2*c*n - a^2*b*d*n)*x)*log(b*x + a))/(b^6*d*g^3*x^4 +
a^3*b^3*c*g^3 + (b^6*c*g^3 + 3*a*b^5*d*g^3)*x^3 + 3*(a*b^5*c*g^3 + a^2*b^4*
d*g^3)*x^2 + (3*a^2*b^4*c*g^3 + a^3*b^3*d*g^3)*x), x)) - (2*b*x + a)*B*c*d*
i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a
```

```
^2*b^2*g^3) - (2*b*x + a)*A*c*d*i^2/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*
g^3) - 1/2*B*c^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^3*g^3*x^2 +
2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*A*c^2*i^2/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a
^2*b*g^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{{\left(a\,g+b\,g\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
3,x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**3,x)
```

```
[Out] Timed out
```

3.124 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^4}\,dx$

Optimal. Leaf size=93

$$-\frac{i^2(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3g^4(a+bx)^3(bc-ad)}-\frac{Bi^2n(c+dx)^3}{9g^4(a+bx)^3(bc-ad)}$$

```
[Out] -1/9*B*i^2*n*(d*x+c)^3/(-a*d+b*c)/g^4/(b*x+a)^3-1/3*i^2*(d*x+c)^3*(A+B*ln(e
*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/g^4/(b*x+a)^3
```

Rubi [B] time = 0.52, antiderivative size = 301, normalized size of antiderivative = 3.24, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.093, Rules used = {2528, 2525, 12, 44}

$$-\frac{d^2i^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g^4(a+bx)}-\frac{di^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g^4(a+bx)^2}-\frac{i^2(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^3g^4(a+bx)^3}-\frac{Bd^3i^2}{3b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^
4,x]
```

```
[Out] -(B*(b*c - a*d)^2*i^2*n)/(9*b^3*g^4*(a + b*x)^3) - (B*d*(b*c - a*d)*i^2*n)/
(3*b^3*g^4*(a + b*x)^2) - (B*d^2*i^2*n)/(3*b^3*g^4*(a + b*x)) - (B*d^3*i^2*
n*Log[a + b*x])/(3*b^3*(b*c - a*d)*g^4) - ((b*c - a*d)^2*i^2*(A + B*Log[e*(
(a + b*x)/(c + d*x))^n]))/(3*b^3*g^4*(a + b*x)^3) - (d*(b*c - a*d)*i^2*(A +
 B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^4*(a + b*x)^2) - (d^2*i^2*(A + B
*Log[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^4*(a + b*x)) + (B*d^3*i^2*n*Log[c
+ d*x])/(3*b^3*(b*c - a*d)*g^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
```

```
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(124c+124dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^4}dx = \int \left(\frac{15376(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^4(a+bx)^4} + \frac{30752d(bc-\right.$$

$$= \frac{\left(15376d^2\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^2}dx}{b^2g^4} + \frac{(30752d(bc-ad))\int \frac{A+B\,\mathrm{l}}{}}{b^2g^4}$$

$$= -\frac{15376(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3b^3g^4(a+bx)^3} - \frac{15376d(bc-ac}{b}$$

$$= -\frac{15376(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3b^3g^4(a+bx)^3} - \frac{15376d(bc-ac}{b}$$

$$= -\frac{15376(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3b^3g^4(a+bx)^3} - \frac{15376d(bc-ac}{b}$$

$$= -\frac{15376B(bc-ad)^2n}{9b^3g^4(a+bx)^3} - \frac{15376Bd(bc-ad)n}{3b^3g^4(a+bx)^2} - \frac{15376Bd^2n}{3b^3g^4(a+bx)}$$

Mathematica [B] time = 0.32, size = 329, normalized size = 3.54

$$-\frac{i^2\left(-3a^3Ad^3-3a^3Bd^3n\log(c+dx)-a^3Bd^3n-9a^2Abd^3x+3B(bc-ad)\left(a^2d^2+abd(c+3dx)+b^2\left(c^2+3ca\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b
*g*x)^4,x]
```

```
[Out] -1/9*(i^2*(3*A*b^3*c^3 - 3*a^3*A*d^3 + b^3*B*c^3*n - a^3*B*d^3*n + 9*A*b^3*
c^2*d*x - 9*a^2*A*b*d^3*x + 3*b^3*B*c^2*d*n*x - 3*a^2*b*B*d^3*n*x + 9*A*b^3
*c*d^2*x^2 - 9*a*A*b^2*d^3*x^2 + 3*b^3*B*c*d^2*n*x^2 - 3*a*b^2*B*d^3*n*x^2
+ 3*B*d^3*n*(a + b*x)^3*Log[a + b*x] + 3*B*(b*c - a*d)*(a^2*d^2 + a*b*d*(c
+ 3*d*x) + b^2*(c^2 + 3*c*d*x + 3*d^2*x^2))*Log[e*((a + b*x)/(c + d*x))^n]
- 3*a^3*B*d^3*n*Log[c + d*x] - 9*a^2*b*B*d^3*n*x*Log[c + d*x] - 9*a*b^2*B*d
^3*n*x^2*Log[c + d*x] - 3*b^3*B*d^3*n*x^3*Log[c + d*x]))/(b^3*(b*c - a*d)*g
^4*(a + b*x)^3)
```

fricas [B] time = 1.01, size = 409, normalized size = 4.40

$$-\frac{\left(Bb^3c^3-Ba^3d^3\right)i^2n+3\left(Ab^3c^3-Aa^3d^3\right)i^2+3\left(\left(Bb^3cd^2-Bab^2d^3\right)i^2n+3\left(Ab^3cd^2-Aab^2d^3\right)i^2\right)x^2+3\left(\left(Bb\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, a
lgorithm="fricas")
```

```
[Out] -1/9*((B*b^3*c^3 - B*a^3*d^3)*i^2*n + 3*(A*b^3*c^3 - A*a^3*d^3)*i^2 + 3*((B
*b^3*c*d^2 - B*a*b^2*d^3)*i^2*n + 3*(A*b^3*c*d^2 - A*a*b^2*d^3)*i^2)*x^2 +
3*((B*b^3*c^2*d - B*a^2*b*d^3)*i^2*n + 3*(A*b^3*c^2*d - A*a^2*b*d^3)*i^2)*x
 + 3*(3*(B*b^3*c*d^2 - B*a*b^2*d^3)*i^2*x^2 + 3*(B*b^3*c^2*d - B*a^2*b*d^3)
*i^2*x + (B*b^3*c^3 - B*a^3*d^3)*i^2)*log(e) + 3*(B*b^3*d^3*i^2*n*x^3 + 3*B
*b^3*c*d^2*i^2*n*x^2 + 3*B*b^3*c^2*d*i^2*n*x + B*b^3*c^3*i^2*n)*log((b*x +
a)/(d*x + c)))/((b^7*c - a*b^6*d)*g^4*x^3 + 3*(a*b^6*c - a^2*b^5*d)*g^4*x^2
 + 3*(a^2*b^5*c - a^3*b^4*d)*g^4*x + (a^3*b^4*c - a^4*b^3*d)*g^4)
```

giac [A] time = 53.75, size = 94, normalized size = 1.01

$$\frac{1}{9}\left(\frac{bc}{(bc-ad)^2}-\frac{ad}{(bc-ad)^2}\right)\left(\frac{3\,(dx+c)^3Bn\log\left(\frac{bx+a}{dx+c}\right)}{(bx+a)^3g^4}+\frac{(Bn+3\,A+3\,B)(dx+c)^3}{(bx+a)^3g^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, a
lgorithm="giac")
```

```
[Out] 1/9*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)*(3*(d*x + c)^3*B*n*log((b*x + a
)/(d*x + c))/((b*x + a)^3*g^4) + (B*n + 3*A + 3*B)*(d*x + c)^3/((b*x + a)^3
*g^4))
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int\frac{(dix+ci)^2\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)}{\left(bgx+ag\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4,x)
```

maxima [B] time = 1.94, size = 1544, normalized size = 16.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, a
lgorithm="maxima")
```

```
[Out] -1/18*B*d^2*i^2*n*((11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2 + 6*(3*b^4*c^2
 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^2*c*d + 2*a^3*
b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*(a*b^7*c^2 - 2
*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4*
b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*g^4) + 6*(3*b^
2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(b*x + a)/((b^6*c^3 - 3*a*b^5*c^2*d + 3
*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3
)*log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g
^4)) - 1/18*B*c^2*i^2*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^
2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x
^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 -
 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*
d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2
- a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^
2*c*d^2 - a^3*b*d^3)*g^4)) - 1/18*B*c*d*i^2*n*((5*a*b^2*c^2 - 22*a^2*b*c*d
+ 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d +
```

```
 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*
c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d
 + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) -
6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*
d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*
a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4)) - 1/3*(3*b*x + a)*B*c*d*
i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 +
 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*(3*b^2*x^2 + 3*a*b*x + a^2)*B*d^2*i^2
*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*
a^2*b^4*g^4*x + a^3*b^3*g^4) - 1/3*(3*b*x + a)*A*c*d*i^2/(b^5*g^4*x^3 + 3*a
*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*(3*b^2*x^2 + 3*a*b*x +
a^2)*A*d^2*i^2/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g
^4) - 1/3*B*c^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^4*x^3 + 3
*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) - 1/3*A*c^2*i^2/(b^4*g^4*x^3
+ 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4)
```

mupad [**B**] time = 5.62, size = 421, normalized size = 4.53

$$-\frac{x\left(3\,A\,a\,b\,d^2\,i^2+3\,A\,b^2\,c\,d\,i^2+B\,a\,b\,d^2\,i^2\,n+B\,b^2\,c\,d\,i^2\,n\right)+x^2\,\left(3\,A\,b^2\,d^2\,i^2+B\,b^2\,d^2\,i^2\,n\right)+A\,a^2\,d^2\,i^2+A\,b}{3\,a^3\,b^3\,g^4+9\,a^2\,b^4\,g^4\,x+9\,a\,b^5\,g^4\,x^2+3\,b^6\,g^4\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
4,x)
```

```
[Out] - (x*(3*A*a*b*d^2*i^2 + 3*A*b^2*c*d*i^2 + B*a*b*d^2*i^2*n + B*b^2*c*d*i^2*n
) + x^2*(3*A*b^2*d^2*i^2 + B*b^2*d^2*i^2*n) + A*a^2*d^2*i^2 + A*b^2*c^2*i^2
 + (B*a^2*d^2*i^2*n)/3 + (B*b^2*c^2*i^2*n)/3 + A*a*b*c*d*i^2 + (B*a*b*c*d*i
^2*n)/3)/(3*a^3*b^3*g^4 + 3*b^6*g^4*x^3 + 9*a^2*b^4*g^4*x + 9*a*b^5*g^4*x^2
) - (log(e*((a + b*x)/(c + d*x))^n)*(a*((B*a*d^2*i^2)/(3*b^3) + (B*c*d*i^2)
/(3*b^2)) + x*(b*((B*a*d^2*i^2)/(3*b^3) + (B*c*d*i^2)/(3*b^2)) + (2*B*a*d^2
*i^2)/(3*b^2) + (2*B*c*d*i^2)/(3*b)) + (B*c^2*i^2)/(3*b) + (B*d^2*i^2*x^2)/
b))/(a^3*g^4 + b^3*g^4*x^3 + 3*a*b^2*g^4*x^2 + 3*a^2*b*g^4*x) - (B*d^3*i^2*
n*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*2i)/(3*b^3*g^4*(a*d - b*c))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**4,x)
```

```
[Out] Timed out
```

3.125 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^5}\,dx$

Optimal. Leaf size=189

$$-\frac{bi^2(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4g^5(a+bx)^4(bc-ad)^2}+\frac{di^2(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3g^5(a+bx)^3(bc-ad)^2}-\frac{bBi^2n(c+dx)^4}{16g^5(a+bx)^4(bc-ad)^2}+\frac{Bdi^2\cdots}{9g^5(a+\cdots}$$

```
[Out] 1/9*B*d*i^2*n*(d*x+c)^3/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/16*b*B*i^2*n*(d*x+c)^4
/(-a*d+b*c)^2/g^5/(b*x+a)^4+1/3*d*i^2*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))
^n))/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/4*b*i^2*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x
+c))^n))/(-a*d+b*c)^2/g^5/(b*x+a)^4
```

Rubi [A] time = 0.60, antiderivative size = 340, normalized size of antiderivative = 1.80, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.093, Rules used = {2528, 2525, 12, 44}

$$-\frac{d^2i^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^3g^5(a+bx)^2}-\frac{2di^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^3g^5(a+bx)^3}-\frac{i^2(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4b^3g^5(a+bx)^4}+\frac{\cdots}{12b\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^
5,x]
```

```
[Out] -(B*(b*c - a*d)^2*i^2*n)/(16*b^3*g^5*(a + b*x)^4) - (5*B*d*(b*c - a*d)*i^2*
n)/(36*b^3*g^5*(a + b*x)^3) - (B*d^2*i^2*n)/(24*b^3*g^5*(a + b*x)^2) + (B*d
^3*i^2*n)/(12*b^3*(b*c - a*d)*g^5*(a + b*x)) + (B*d^4*i^2*n*Log[a + b*x])/(
12*b^3*(b*c - a*d)^2*g^5) - ((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c +
 d*x))^n]))/(4*b^3*g^5*(a + b*x)^4) - (2*d*(b*c - a*d)*i^2*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n]))/(3*b^3*g^5*(a + b*x)^3) - (d^2*i^2*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n]))/(2*b^3*g^5*(a + b*x)^2) - (B*d^4*i^2*n*Log[c + d*x]
)/(12*b^3*(b*c - a*d)^2*g^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(125c+125dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^5}\,dx = \int\left(\frac{15625(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^5(a+bx)^5}+\frac{31250d(bc-\ldots}{\ldots}\right.$$

$$=\frac{\left(15625d^2\right)\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^3}\,dx}{b^2g^5}+\frac{(31250d(bc-ad))\int\frac{A+B\,\mathrm{l}\ldots}{\ldots}}{b^2g^5}$$

$$=-\frac{15625(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{4b^3g^5(a+bx)^4}-\frac{31250d(bc-a\ldots}{3b\ldots}$$

$$=-\frac{15625(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{4b^3g^5(a+bx)^4}-\frac{31250d(bc-a\ldots}{3b\ldots}$$

$$=-\frac{15625(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{4b^3g^5(a+bx)^4}-\frac{31250d(bc-a\ldots}{3b\ldots}$$

$$=-\frac{15625B(bc-ad)^2n}{16b^3g^5(a+bx)^4}-\frac{78125Bd(bc-ad)n}{36b^3g^5(a+bx)^3}-\frac{15625Bd^2n}{24b^3g^5(a+bx\ldots}$$

Mathematica [B] time = 0.42, size = 474, normalized size = 2.51

$$-\frac{d^2i^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^3g^5(a+bx)^2}-\frac{2di^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^3g^5(a+bx)^3}-\frac{i^2(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4b^3g^5(a+bx)^4}-\ldots$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b
*g*x)^5,x]
```

```
[Out] -1/4*((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^5*(a
 + b*x)^4) - (2*d*(b*c - a*d)*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(
3*b^3*g^5*(a + b*x)^3) - (d^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(
2*b^3*g^5*(a + b*x)^2) - (B*d^2*i^2*n*((a + b*x)^(-2) - (2*d)/((b*c - a*d)*
(a + b*x)) - (2*d^2*Log[a + b*x])/(b*c - a*d)^2 + (2*d^2*Log[c + d*x])/(b*c
 - a*d)^2))/(4*b^3*g^5) - (B*d*i^2*n*((2*(b*c - a*d))/(a + b*x)^3 - (3*d)/(
a + b*x)^2 + (6*d^2)/((b*c - a*d)*(a + b*x)) + (6*d^3*Log[a + b*x])/(b*c -
a*d)^2 - (6*d^3*Log[c + d*x])/(b*c - a*d)^2))/(9*b^3*g^5) - (B*i^2*n*((3*(b
*c - a*d)^2)/(a + b*x)^4 - (4*d*(b*c - a*d))/(a + b*x)^3 + (6*d^2)/(a + b*x
)^2 - (12*d^3)/((b*c - a*d)*(a + b*x)) - (12*d^4*Log[a + b*x])/(b*c - a*d)^
2 + (12*d^4*Log[c + d*x])/(b*c - a*d)^2))/(48*b^3*g^5)
```

fricas [B] time = 0.87, size = 710, normalized size = 3.76

$$12\left(Bb^4cd^3-Bab^3d^4\right)i^2nx^3-\left(9\,Bb^4c^4-16\,Bab^3c^3d+7\,Ba^4d^4\right)i^2n-12\left(3\,Ab^4c^4-4\,Aab^3c^3d+Aa^4d^4\right)i^2-6\left(\ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, a
lgorithm="fricas")
```

```
[Out] 1/144*(12*(B*b^4*c*d^3 - B*a*b^3*d^4)*i^2*n*x^3 - (9*B*b^4*c^4 - 16*B*a*b^3
*c^3*d + 7*B*a^4*d^4)*i^2*n - 12*(3*A*b^4*c^4 - 4*A*a*b^3*c^3*d + A*a^4*d^4
)*i^2 - 6*((B*b^4*c^2*d^2 - 8*B*a*b^3*c*d^3 + 7*B*a^2*b^2*d^4)*i^2*n + 12*(
A*b^4*c^2*d^2 - 2*A*a*b^3*c*d^3 + A*a^2*b^2*d^4)*i^2)*x^2 - 4*((5*B*b^4*c^3
*d - 12*B*a*b^3*c^2*d^2 + 7*B*a^3*b*d^4)*i^2*n + 12*(2*A*b^4*c^3*d - 3*A*a*
b^3*c^2*d^2 + A*a^3*b*d^4)*i^2)*x - 12*(6*(B*b^4*c^2*d^2 - 2*B*a*b^3*c*d^3
+ B*a^2*b^2*d^4)*i^2*x^2 + 4*(2*B*b^4*c^3*d - 3*B*a*b^3*c^2*d^2 + B*a^3*b*d
^4)*i^2*x + (3*B*b^4*c^4 - 4*B*a*b^3*c^3*d + B*a^4*d^4)*i^2)*log(e) + 12*(B
*b^4*d^4*i^2*n*x^4 + 4*B*a*b^3*d^4*i^2*n*x^3 - 6*(B*b^4*c^2*d^2 - 2*B*a*b^3
*c*d^3)*i^2*n*x^2 - 4*(2*B*b^4*c^3*d - 3*B*a*b^3*c^2*d^2)*i^2*n*x - (3*B*b^
4*c^4 - 4*B*a*b^3*c^3*d)*i^2*n)*log((b*x + a)/(d*x + c)))/((b^9*c^2 - 2*a*b
^8*c*d + a^2*b^7*d^2)*g^5*x^4 + 4*(a*b^8*c^2 - 2*a^2*b^7*c*d + a^3*b^6*d^2)
*g^5*x^3 + 6*(a^2*b^7*c^2 - 2*a^3*b^6*c*d + a^4*b^5*d^2)*g^5*x^2 + 4*(a^3*b
^6*c^2 - 2*a^4*b^5*c*d + a^5*b^4*d^2)*g^5*x + (a^4*b^5*c^2 - 2*a^5*b^4*c*d
+ a^6*b^3*d^2)*g^5)
```

giac [A] time = 78.92, size = 222, normalized size = 1.17

$$\frac{1}{144}\left(\frac{12\left(3\,Bbn-\frac{4\,(bx+a)Bdn}{dx+c}\right)\log\left(\frac{bx+a}{dx+c}\right)}{\frac{(bx+a)^4bcg^5}{(dx+c)^4}-\frac{(bx+a)^4adg^5}{(dx+c)^4}}+\frac{9\,Bbn-\frac{16\,(bx+a)Bdn}{dx+c}+36\,Ab+36\,Bb-\frac{48\,(bx+a)Ad}{dx+c}-\frac{48\,(bx+a)Bd}{dx+c}}{\frac{(bx+a)^4bcg^5}{(dx+c)^4}-\frac{(bx+a)^4adg^5}{(dx+c)^4}}\right)\left(\frac{bc}{(bc-a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, a
lgorithm="giac")
```

```
[Out] 1/144*(12*(3*B*b*n - 4*(b*x + a)*B*d*n/(d*x + c))*log((b*x + a)/(d*x + c))/
((b*x + a)^4*b*c*g^5/(d*x + c)^4 - (b*x + a)^4*a*d*g^5/(d*x + c)^4) + (9*B*
b*n - 16*(b*x + a)*B*d*n/(d*x + c) + 36*A*b + 36*B*b - 48*(b*x + a)*A*d/(d*
x + c) - 48*(b*x + a)*B*d/(d*x + c))/((b*x + a)^4*b*c*g^5/(d*x + c)^4 - (b*
x + a)^4*a*d*g^5/(d*x + c)^4))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^2\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)}{\left(bgx+ag\right)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^5,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^5,x)
```

maxima [B] time = 2.86, size = 2247, normalized size = 11.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^5,x, a
lgorithm="maxima")
```

```
[Out] 1/48*B*c^2*i^2*n*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c
*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^
```

```
2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^
3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4
*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^
5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a
^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*
b*d^3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2
*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 -
4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5)) - 1/
144*B*d^2*i^2*n*((13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7*a^
5*d^3 - 12*(6*b^5*c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 6*(6*b^5*c^3 -
 46*a*b^4*c^2*d + 29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3)*x^2 + 4*(10*a*b^4*c^3 -
 63*a^2*b^3*c^2*d + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x)/((b^10*c^3 - 3*a*b^9
*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2*b^8*
c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^3*b^7
*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a^4*b^
6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*b^5*c
^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^
3 + a^2*d^4)*log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4
*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*
d^4)*log(d*x + c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4
*c*d^3 + a^4*b^3*d^4)*g^5)) - 1/72*B*c*d*i^2*n*((7*a*b^3*c^3 - 33*a^2*b^2*c
^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(
4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3
*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*
a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a
^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*
a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3
*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^
6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6
*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g
^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2
*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5)) - 1/6*(4*b*x + a)*B*c*d
*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3
+ 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12*(6*b^2*x^2 + 4*
a*b*x + a^2)*B*d^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^7*g^5*x^4
+ 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/
6*(4*b*x + a)*A*c*d*i^2/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2
+ 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12*(6*b^2*x^2 + 4*a*b*x + a^2)*A*d^2*i
^2/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a
^4*b^3*g^5) - 1/4*B*c^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^5
*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) -
 1/4*A*c^2*i^2/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b
^2*g^5*x + a^4*b*g^5)
```

mupad [B] time = 6.07, size = 652, normalized size = 3.45

$$-\frac{\frac{12\,A\,a^3\,d^3\,i^2-36\,A\,b^3\,c^3\,i^2+7\,B\,a^3\,d^3\,i^2\,n-9\,B\,b^3\,c^3\,i^2\,n+12\,A\,a\,b^2\,c^2\,d\,i^2+12\,A\,a^2\,b\,c\,d^2\,i^2+7\,B\,a\,b^2\,c^2\,d\,i^2\,n+7\,B\,a^2\,b\,c\,d^2\,i^2\,n}{12\,(a\,d-b\,c)}+\frac{x\left(12\,A\,a^2\,b\,d^3\,i^2-2\right.}{}}{12\,a^4\,b^3\,g^5+48\,a^3\,b^4\,g^5\,x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
5,x)
```

```
[Out] - ((12*A*a^3*d^3*i^2 - 36*A*b^3*c^3*i^2 + 7*B*a^3*d^3*i^2*n - 9*B*b^3*c^3*i
^2*n + 12*A*a*b^2*c^2*d*i^2 + 12*A*a^2*b*c*d^2*i^2 + 7*B*a*b^2*c^2*d*i^2*n
+ 7*B*a^2*b*c*d^2*i^2*n)/(12*(a*d - b*c)) + (x*(12*A*a^2*b*d^3*i^2 - 24*A*b
^3*c^2*d*i^2 + 12*A*a*b^2*c*d^2*i^2 + 7*B*a^2*b*d^3*i^2*n - 5*B*b^3*c^2*d*i
^2*n + 7*B*a*b^2*c*d^2*i^2*n))/(3*(a*d - b*c)) + (x^2*(12*A*a*b^2*d^3*i^2 -
```

```
 12*A*b^3*c*d^2*i^2 + 7*B*a*b^2*d^3*i^2*n - B*b^3*c*d^2*i^2*n))/(2*(a*d - b
*c)) + (B*b^3*d^3*i^2*n*x^3)/(a*d - b*c))/(12*a^4*b^3*g^5 + 12*b^7*g^5*x^4
+ 48*a^3*b^4*g^5*x + 48*a*b^6*g^5*x^3 + 72*a^2*b^5*g^5*x^2) - (log(e*((a +
b*x)/(c + d*x))^n)*(a*((B*a*d^2*i^2)/(12*b^3) + (B*c*d*i^2)/(6*b^2)) + x*(b
*((B*a*d^2*i^2)/(12*b^3) + (B*c*d*i^2)/(6*b^2)) + (B*a*d^2*i^2)/(4*b^2) + (
B*c*d*i^2)/(2*b)) + (B*c^2*i^2)/(4*b) + (B*d^2*i^2*x^2)/(2*b)))/(a^4*g^5 +
b^4*g^5*x^4 + 4*a*b^3*g^5*x^3 + 6*a^2*b^2*g^5*x^2 + 4*a^3*b*g^5*x) - (B*d^4
*i^2*n*atanh((12*b^5*c^2*g^5 - 12*a^2*b^3*d^2*g^5)/(12*b^3*g^5*(a*d - b*c)^
2) - (2*b*d*x)/(a*d - b*c)))/(6*b^3*g^5*(a*d - b*c)^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**5,x)
```

```
[Out] Timed out
```

3.126 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^6}\,dx$

Optimal. Leaf size=293

$$-\frac{b^2i^2(c+dx)^5\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{5g^6(a+bx)^5(bc-ad)^3}-\frac{d^2i^2(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3g^6(a+bx)^3(bc-ad)^3}+\frac{bdi^2(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{2g^6(a+bx)^4(bc-ad)^3}$$

```
[Out] -1/9*B*d^2*i^2*n*(d*x+c)^3/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/8*b*B*d*i^2*n*(d*x+
c)^4/(-a*d+b*c)^3/g^6/(b*x+a)^4-1/25*b^2*B*i^2*n*(d*x+c)^5/(-a*d+b*c)^3/g^6
/(b*x+a)^5-1/3*d^2*i^2*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)
^3/g^6/(b*x+a)^3+1/2*b*d*i^2*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*
d+b*c)^3/g^6/(b*x+a)^4-1/5*b^2*i^2*(d*x+c)^5*(A+B*ln(e*((b*x+a)/(d*x+c))^n)
)/(-a*d+b*c)^3/g^6/(b*x+a)^5
```

Rubi [A] time = 0.72, antiderivative size = 375, normalized size of antiderivative = 1.28, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.093, Rules used = {2528, 2525, 12, 44}

$$-\frac{d^2i^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^3g^6(a+bx)^3}-\frac{di^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^3g^6(a+bx)^4}-\frac{i^2(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{5b^3g^6(a+bx)^5}-\frac{}{3(}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^
6,x]
```

```
[Out] -(B*(b*c - a*d)^2*i^2*n)/(25*b^3*g^6*(a + b*x)^5) - (3*B*d*(b*c - a*d)*i^2*
n)/(40*b^3*g^6*(a + b*x)^4) - (B*d^2*i^2*n)/(90*b^3*g^6*(a + b*x)^3) + (B*d
^3*i^2*n)/(60*b^3*(b*c - a*d)*g^6*(a + b*x)^2) - (B*d^4*i^2*n)/(30*b^3*(b*c
 - a*d)^2*g^6*(a + b*x)) - (B*d^5*i^2*n*Log[a + b*x])/(30*b^3*(b*c - a*d)^3
*g^6) - ((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(5*b^3*g
^6*(a + b*x)^5) - (d*(b*c - a*d)*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
)/(2*b^3*g^6*(a + b*x)^4) - (d^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
)/(3*b^3*g^6*(a + b*x)^3) + (B*d^5*i^2*n*Log[c + d*x])/(30*b^3*(b*c - a*d)^
3*g^6)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(126c+126dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^6}dx = \int \left(\frac{15876(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^6(a+bx)^6}+\frac{31752d(bc-ad}{b^2}\right.$$

$$=\frac{\left(15876d^2\right)\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^4}dx}{b^2g^6}+\frac{(31752d(bc-ad))\int\frac{A+B\log(}{(a+}}{b^2g^6}$$

$$=-\frac{15876(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{5b^3g^6(a+bx)^5}-\frac{7938d(bc-ad)\left(A\right.}{b^3g^6(}$$

$$=-\frac{15876(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{5b^3g^6(a+bx)^5}-\frac{7938d(bc-ad)\left(A\right.}{b^3g^6(}$$

$$=-\frac{15876(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{5b^3g^6(a+bx)^5}-\frac{7938d(bc-ad)\left(A\right.}{b^3g^6(}$$

$$=-\frac{15876B(bc-ad)^2n}{25b^3g^6(a+bx)^5}-\frac{11907Bd(bc-ad)n}{10b^3g^6(a+bx)^4}-\frac{882Bd^2n}{5b^3g^6(a+bx)^3}+$$

Mathematica [A] time = 1.05, size = 357, normalized size = 1.22

$$i^2\left(-\frac{360a^2Ad^2}{(a+bx)^5}-\frac{60B\left(a^2d^2+abd(3c+5dx)+b^2\left(6c^2+15cdx+10d^2x^2\right)\right)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^5}-\frac{72a^2Bd^2n}{(a+bx)^5}-\frac{360Ab^2c^2}{(a+bx)^5}-\frac{900Abcd}{(a+bx)^4}+\frac{720aAbcd}{(a+bx)^5}-\frac{600A}{(a+b}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b
*g*x)^6,x]
```

```
[Out] (i^2*((-360*A*b^2*c^2)/(a + b*x)^5 + (720*a*A*b*c*d)/(a + b*x)^5 - (360*a^2
*A*d^2)/(a + b*x)^5 - (72*b^2*B*c^2*n)/(a + b*x)^5 + (144*a*b*B*c*d*n)/(a +
 b*x)^5 - (72*a^2*B*d^2*n)/(a + b*x)^5 - (900*A*b*c*d)/(a + b*x)^4 + (900*a
*A*d^2)/(a + b*x)^4 - (135*b*B*c*d*n)/(a + b*x)^4 + (135*a*B*d^2*n)/(a + b*
x)^4 - (600*A*d^2)/(a + b*x)^3 - (20*B*d^2*n)/(a + b*x)^3 + (30*B*d^3*n)/((
b*c - a*d)*(a + b*x)^2) - (60*B*d^4*n)/((b*c - a*d)^2*(a + b*x)) - (60*B*d^
5*n*Log[a + b*x])/(b*c - a*d)^3 - (60*B*(a^2*d^2 + a*b*d*(3*c + 5*d*x) + b^
2*(6*c^2 + 15*c*d*x + 10*d^2*x^2))*Log[e*((a + b*x)/(c + d*x))^n])/(a + b*x
)^5 + (60*B*d^5*n*Log[c + d*x])/(b*c - a*d)^3))/(1800*b^3*g^6)
```

fricas [B] time = 1.00, size = 1087, normalized size = 3.71

$$-\frac{60\left(Bb^5cd^4 - Bab^4d^5\right)i^2nx^4 - 30\left(Bb^5c^2d^3 - 10\,Bab^4cd^4 + 9\,Ba^2b^3d^5\right)i^2nx^3 + \left(72\,Bb^5c^5 - 225\,Bab^4c^4d + 200\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^6,x, a
lgorithm="fricas")
```

```
[Out] -1/1800*(60*(B*b^5*c*d^4 - B*a*b^4*d^5)*i^2*n*x^4 - 30*(B*b^5*c^2*d^3 - 10*
B*a*b^4*c*d^4 + 9*B*a^2*b^3*d^5)*i^2*n*x^3 + (72*B*b^5*c^5 - 225*B*a*b^4*c^
4*d + 200*B*a^2*b^3*c^3*d^2 - 47*B*a^5*d^5)*i^2*n + 60*(6*A*b^5*c^5 - 15*A*
a*b^4*c^4*d + 10*A*a^2*b^3*c^3*d^2 - A*a^5*d^5)*i^2 + 10*((2*B*b^5*c^3*d^2
- 15*B*a*b^4*c^2*d^3 + 60*B*a^2*b^3*c*d^4 - 47*B*a^3*b^2*d^5)*i^2*n + 60*(A
*b^5*c^3*d^2 - 3*A*a*b^4*c^2*d^3 + 3*A*a^2*b^3*c*d^4 - A*a^3*b^2*d^5)*i^2)*
x^2 + 5*((27*B*b^5*c^4*d - 100*B*a*b^4*c^3*d^2 + 120*B*a^2*b^3*c^2*d^3 - 47
*B*a^4*b*d^5)*i^2*n + 60*(3*A*b^5*c^4*d - 8*A*a*b^4*c^3*d^2 + 6*A*a^2*b^3*c
^2*d^3 - A*a^4*b*d^5)*i^2)*x + 60*(10*(B*b^5*c^3*d^2 - 3*B*a*b^4*c^2*d^3 +
3*B*a^2*b^3*c*d^4 - B*a^3*b^2*d^5)*i^2*x^2 + 5*(3*B*b^5*c^4*d - 8*B*a*b^4*c
^3*d^2 + 6*B*a^2*b^3*c^2*d^3 - B*a^4*b*d^5)*i^2*x + (6*B*b^5*c^5 - 15*B*a*b
^4*c^4*d + 10*B*a^2*b^3*c^3*d^2 - B*a^5*d^5)*i^2)*log(e) + 60*(B*b^5*d^5*i^
2*n*x^5 + 5*B*a*b^4*d^5*i^2*n*x^4 + 10*B*a^2*b^3*d^5*i^2*n*x^3 + 10*(B*b^5*
c^3*d^2 - 3*B*a*b^4*c^2*d^3 + 3*B*a^2*b^3*c*d^4)*i^2*n*x^2 + 5*(3*B*b^5*c^4
*d - 8*B*a*b^4*c^3*d^2 + 6*B*a^2*b^3*c^2*d^3)*i^2*n*x + (6*B*b^5*c^5 - 15*B
*a*b^4*c^4*d + 10*B*a^2*b^3*c^3*d^2)*i^2*n)*log((b*x + a)/(d*x + c)))/((b^1
1*c^3 - 3*a*b^10*c^2*d + 3*a^2*b^9*c*d^2 - a^3*b^8*d^3)*g^6*x^5 + 5*(a*b^10
*c^3 - 3*a^2*b^9*c^2*d + 3*a^3*b^8*c*d^2 - a^4*b^7*d^3)*g^6*x^4 + 10*(a^2*b
^9*c^3 - 3*a^3*b^8*c^2*d + 3*a^4*b^7*c*d^2 - a^5*b^6*d^3)*g^6*x^3 + 10*(a^3
*b^8*c^3 - 3*a^4*b^7*c^2*d + 3*a^5*b^6*c*d^2 - a^6*b^5*d^3)*g^6*x^2 + 5*(a^
4*b^7*c^3 - 3*a^5*b^6*c^2*d + 3*a^6*b^5*c*d^2 - a^7*b^4*d^3)*g^6*x + (a^5*b
^6*c^3 - 3*a^6*b^5*c^2*d + 3*a^7*b^4*c*d^2 - a^8*b^3*d^3)*g^6)
```

giac [A] time = 110.70, size = 376, normalized size = 1.28

$$\frac{1}{1800}\left(\frac{60\left(6\,Bb^2n - \frac{15\,(bx+a)Bbdn}{dx+c} + \frac{10\,(bx+a)^2Bd^2n}{(dx+c)^2}\right)\log\left(\frac{bx+a}{dx+c}\right)}{\frac{(bx+a)^5b^2c^2g^6}{(dx+c)^5} - \frac{2\,(bx+a)^5abcdg^6}{(dx+c)^5} + \frac{(bx+a)^5a^2d^2g^6}{(dx+c)^5}} + \frac{72\,Bb^2n - \frac{225\,(bx+a)Bbdn}{dx+c} + \frac{200\,(bx+a)^2Bd^2n}{(dx+c)^2} + 360\,A}{\frac{(bx+a)^5b^2c}{(dx+c)^5}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^6,x, a
lgorithm="giac")
```

```
[Out] 1/1800*(60*(6*B*b^2*n - 15*(b*x + a)*B*b*d*n/(d*x + c) + 10*(b*x + a)^2*B*d
^2*n/(d*x + c)^2)*log((b*x + a)/(d*x + c))/((b*x + a)^5*b^2*c^2*g^6/(d*x +
c)^5 - 2*(b*x + a)^5*a*b*c*d*g^6/(d*x + c)^5 + (b*x + a)^5*a^2*d^2*g^6/(d*x
 + c)^5) + (72*B*b^2*n - 225*(b*x + a)*B*b*d*n/(d*x + c) + 200*(b*x + a)^2*
B*d^2*n/(d*x + c)^2 + 360*A*b^2 + 360*B*b^2 - 900*(b*x + a)*A*b*d/(d*x + c)
 - 900*(b*x + a)*B*b*d/(d*x + c) + 600*(b*x + a)^2*A*d^2/(d*x + c)^2 + 600*
(b*x + a)^2*B*d^2/(d*x + c)^2)/((b*x + a)^5*b^2*c^2*g^6/(d*x + c)^5 - 2*(b*
x + a)^5*a*b*c*d*g^6/(d*x + c)^5 + (b*x + a)^5*a^2*d^2*g^6/(d*x + c)^5))*(b
*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)}{\left(bgx + ag\right)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^6,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^6,x)
```

maxima [B] time = 3.18, size = 3058, normalized size = 10.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^6,x, a
lgorithm="maxima")
```

```
[Out] -1/300*B*c^2*i^2*n*((60*b^4*d^4*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2
*b^2*c^2*d^2 - 163*a^3*b*c*d^3 + 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)
*x^3 + 10*(2*b^4*c^2*d^2 - 13*a*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*
c^3*d - 17*a*b^3*c^2*d^2 + 43*a^2*b^2*c*d^3 - 77*a^3*b*d^4)*x)/((b^10*c^4 -
 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5
 + 5*(a*b^9*c^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a
^5*b^5*d^4)*g^6*x^4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2
 - 4*a^5*b^5*c*d^3 + a^6*b^4*d^4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3
*d + 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^
6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4
)*g^6*x + (a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*
d^3 + a^9*b*d^4)*g^6) + 60*d^5*log(b*x + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*
a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) -
60*d^5*log(d*x + c)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3
*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6)) - 1/1800*B*d^2*i^2*n*((47
*a^2*b^4*c^4 - 278*a^3*b^3*c^3*d + 822*a^4*b^2*c^2*d^2 - 278*a^5*b*c*d^3 +
47*a^6*d^4 + 60*(10*b^6*c^2*d^2 - 5*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 - 30*(10
*b^6*c^3*d - 95*a*b^5*c^2*d^2 + 46*a^2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^3 + 10*
(20*b^6*c^4 - 140*a*b^5*c^3*d + 537*a^2*b^4*c^2*d^2 - 248*a^3*b^3*c*d^3 + 4
7*a^4*b^2*d^4)*x^2 + 5*(35*a*b^5*c^4 - 218*a^2*b^4*c^3*d + 702*a^3*b^3*c^2*
d^2 - 278*a^4*b^2*c*d^3 + 47*a^5*b*d^4)*x)/((b^12*c^4 - 4*a*b^11*c^3*d + 6*
a^2*b^10*c^2*d^2 - 4*a^3*b^9*c*d^3 + a^4*b^8*d^4)*g^6*x^5 + 5*(a*b^11*c^4 -
 4*a^2*b^10*c^3*d + 6*a^3*b^9*c^2*d^2 - 4*a^4*b^8*c*d^3 + a^5*b^7*d^4)*g^6*
x^4 + 10*(a^2*b^10*c^4 - 4*a^3*b^9*c^3*d + 6*a^4*b^8*c^2*d^2 - 4*a^5*b^7*c*
d^3 + a^6*b^6*d^4)*g^6*x^3 + 10*(a^3*b^9*c^4 - 4*a^4*b^8*c^3*d + 6*a^5*b^7*
c^2*d^2 - 4*a^6*b^6*c*d^3 + a^7*b^5*d^4)*g^6*x^2 + 5*(a^4*b^8*c^4 - 4*a^5*b
^7*c^3*d + 6*a^6*b^6*c^2*d^2 - 4*a^7*b^5*c*d^3 + a^8*b^4*d^4)*g^6*x + (a^5*
b^7*c^4 - 4*a^6*b^6*c^3*d + 6*a^7*b^5*c^2*d^2 - 4*a^8*b^4*c*d^3 + a^9*b^3*d
^4)*g^6) + 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(b*x + a)/((b^8*c
^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4*c*
d^4 - a^5*b^3*d^5)*g^6) - 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(d
*x + c)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3
 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6)) - 1/600*B*c*d*i^2*n*((27*a*b^4*c^4
- 148*a^2*b^3*c^3*d + 352*a^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d^4 -
60*(5*b^5*c*d^3 - a*b^4*d^4)*x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a
^2*b^3*d^4)*x^3 - 10*(10*b^5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*d^3 -
 47*a^3*b^2*d^4)*x^2 + 5*(15*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^2*d^2
 - 428*a^3*b^2*c*d^3 + 77*a^4*b*d^4)*x)/((b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2
*b^9*c^2*d^2 - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a
^2*b^9*c^3*d + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*x^4 +
 10*(a^2*b^9*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 +
a^6*b^5*d^4)*g^6*x^3 + 10*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^
2 - 4*a^6*b^5*c*d^3 + a^7*b^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3
*d + 6*a^6*b^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b^6*c^
4 - 4*a^6*b^5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^
6) - 60*(5*b*c*d^4 - a*d^5)*log(b*x + a)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2
```

```
*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) + 6
0*(5*b*c*d^4 - a*d^5)*log(d*x + c)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c
^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6)) - 1/10*(
5*b*x + a)*B*c*d*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^7*g^6*x^5 +
5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x
 + a^5*b^2*g^6) - 1/30*(10*b^2*x^2 + 5*a*b*x + a^2)*B*d^2*i^2*log(e*(b*x/(d
*x + c) + a/(d*x + c))^n)/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x
^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) - 1/10*(5*b*x + a)
*A*c*d*i^2/(b^7*g^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4
*g^6*x^2 + 5*a^4*b^3*g^6*x + a^5*b^2*g^6) - 1/30*(10*b^2*x^2 + 5*a*b*x + a^
2)*A*d^2*i^2/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b
^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) - 1/5*B*c^2*i^2*log(e*(b*x/(d*x
 + c) + a/(d*x + c))^n)/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3
 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6) - 1/5*A*c^2*i^2/(b^6*g
^6*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*
b^2*g^6*x + a^5*b*g^6)
```

mupad [B] time = 6.71, size = 954, normalized size = 3.26

$$\frac{B d^5 i^2 n \operatorname{atanh}\left(\frac{30 a^3 b^3 d^3 g^6-30 a^2 b^4 c d^2 g^6-30 a b^5 c^2 d g^6+30 b^6 c^3 g^6}{30 b^3 g^6 (a d-b c)^3}+\frac{2 b d x \left(a^2 d^2-2 a b c d+b^2 c^2\right)}{(a d-b c)^3}\right)}{15 b^3 g^6 (a d-b c)^3}-\frac{\ln\left(e\left(\frac{a+b x}{c+d x}\right)^n\right)\left(a\left(\frac{B a d^2}{30 b}\right.\right.}{a^5 g^6+5 a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
6,x)
```

```
[Out] (B*d^5*i^2*n*atanh((30*b^6*c^3*g^6 + 30*a^3*b^3*d^3*g^6 - 30*a*b^5*c^2*d*g^
6 - 30*a^2*b^4*c*d^2*g^6)/(30*b^3*g^6*(a*d - b*c)^3) + (2*b*d*x*(a^2*d^2 +
b^2*c^2 - 2*a*b*c*d))/(a*d - b*c)^3))/(15*b^3*g^6*(a*d - b*c)^3) - (log(e*(
(a + b*x)/(c + d*x))^n)*(a*((B*a*d^2*i^2)/(30*b^3) + (B*c*d*i^2)/(10*b^2))
+ x*(b*((B*a*d^2*i^2)/(30*b^3) + (B*c*d*i^2)/(10*b^2)) + (2*B*a*d^2*i^2)/(1
5*b^2) + (2*B*c*d*i^2)/(5*b)) + (B*c^2*i^2)/(5*b) + (B*d^2*i^2*x^2)/(3*b)))
/(a^5*g^6 + b^5*g^6*x^5 + 5*a*b^4*g^6*x^4 + 10*a^3*b^2*g^6*x^2 + 10*a^2*b^3
*g^6*x^3 + 5*a^4*b*g^6*x) - ((60*A*a^4*d^4*i^2 + 360*A*b^4*c^4*i^2 + 47*B*a
^4*d^4*i^2*n + 72*B*b^4*c^4*i^2*n + 60*A*a^2*b^2*c^2*d^2*i^2 - 540*A*a*b^3*
c^3*d*i^2 + 60*A*a^3*b*c*d^3*i^2 - 153*B*a*b^3*c^3*d*i^2*n + 47*B*a^3*b*c*d
^3*i^2*n + 47*B*a^2*b^2*c^2*d^2*i^2*n)/(60*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))
 + (x^2*(60*A*a^2*b^2*d^4*i^2 + 60*A*b^4*c^2*d^2*i^2 + 47*B*a^2*b^2*d^4*i^2
*n + 2*B*b^4*c^2*d^2*i^2*n - 120*A*a*b^3*c*d^3*i^2 - 13*B*a*b^3*c*d^3*i^2*n
))/(6*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (x*(60*A*a^3*b*d^4*i^2 + 180*A*b^4
*c^3*d*i^2 - 300*A*a*b^3*c^2*d^2*i^2 + 60*A*a^2*b^2*c*d^3*i^2 + 47*B*a^3*b*
d^4*i^2*n + 27*B*b^4*c^3*d*i^2*n - 73*B*a*b^3*c^2*d^2*i^2*n + 47*B*a^2*b^2*
c*d^3*i^2*n))/(12*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (d*x^3*(9*B*a*b^3*d^3*
i^2*n - B*b^4*c*d^2*i^2*n))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B*b^4*d^
4*i^2*n*x^4)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))/(30*a^5*b^3*g^6 + 30*b^8*g^6*
x^5 + 150*a^4*b^4*g^6*x + 150*a*b^7*g^6*x^4 + 300*a^3*b^5*g^6*x^2 + 300*a^2
*b^6*g^6*x^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**6,x)
```

```
[Out] Timed out
```

3.127 $\int (ag+bgx)^3(ci+dix)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx$

Optimal. Leaf size=477

$$\frac{b^3g^3i^3(c+dx)^7\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{7d^4}-\frac{b^2g^3i^3(c+dx)^6(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2d^4}-\frac{g^3i^3(c+dx)^4(bc-ad}{}$$

```
[Out] 1/140*B*(-a*d+b*c)^6*g^3*i^3*n*x/b^3/d^3+1/280*B*(-a*d+b*c)^5*g^3*i^3*n*(d*
x+c)^2/b^2/d^4+1/420*B*(-a*d+b*c)^4*g^3*i^3*n*(d*x+c)^3/b/d^4-17/280*B*(-a*
d+b*c)^3*g^3*i^3*n*(d*x+c)^4/d^4+1/14*b*B*(-a*d+b*c)^2*g^3*i^3*n*(d*x+c)^5/
d^4-1/42*b^2*B*(-a*d+b*c)*g^3*i^3*n*(d*x+c)^6/d^4-1/4*(-a*d+b*c)^3*g^3*i^3*
(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^4+3/5*b*(-a*d+b*c)^2*g^3*i^3*(d
*x+c)^5*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^4-1/2*b^2*(-a*d+b*c)*g^3*i^3*(d*x
+c)^6*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^4+1/7*b^3*g^3*i^3*(d*x+c)^7*(A+B*ln
(e*((b*x+a)/(d*x+c))^n))/d^4+1/140*B*(-a*d+b*c)^7*g^3*i^3*n*ln((b*x+a)/(d*x
+c))/b^4/d^4+1/140*B*(-a*d+b*c)^7*g^3*i^3*n*ln(d*x+c)/b^4/d^4
```

Rubi [A] time = 0.99, antiderivative size = 435, normalized size of antiderivative = 0.91, number of steps used = 18, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.093, Rules used = {2528, 2525, 12, 43}

$$\frac{d^2g^3i^3(a+bx)^6(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^4}+\frac{d^3g^3i^3(a+bx)^7\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{7b^4}+\frac{g^3i^3(a+bx)^4(bc-a}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),
x]
```

```
[Out] -(B*(b*c - a*d)^6*g^3*i^3*n*x)/(140*b^3*d^3) + (B*(b*c - a*d)^5*g^3*i^3*n*(
a + b*x)^2)/(280*b^4*d^2) - (B*(b*c - a*d)^4*g^3*i^3*n*(a + b*x)^3)/(420*b^
4*d) - (17*B*(b*c - a*d)^3*g^3*i^3*n*(a + b*x)^4)/(280*b^4) - (B*d*(b*c - a
*d)^2*g^3*i^3*n*(a + b*x)^5)/(14*b^4) - (B*d^2*(b*c - a*d)*g^3*i^3*n*(a + b
*x)^6)/(42*b^4) + ((b*c - a*d)^3*g^3*i^3*(a + b*x)^4*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]))/(4*b^4) + (3*d*(b*c - a*d)^2*g^3*i^3*(a + b*x)^5*(A + B*L
og[e*((a + b*x)/(c + d*x))^n]))/(5*b^4) + (d^2*(b*c - a*d)*g^3*i^3*(a + b*x
)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^4) + (d^3*g^3*i^3*(a + b*x
)^7*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(7*b^4) + (B*(b*c - a*d)^7*g^3*
i^3*n*Log[c + d*x])/(140*b^4*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
```

```
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (127c+127dx)^3(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx = \int\left(\frac{(-bc+ad)^3g^3(127c+127dx)^3\left(A+B\log\right.}{d^3}\right.$$

$$= \frac{\left(b^3g^3\right)\int(127c+127dx)^6\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{2048383d^3}$$

$$= -\frac{2048383(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(e\right.\right.}{4d^4}$$

$$= -\frac{2048383(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(e\right.\right.}{4d^4}$$

$$= -\frac{2048383(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(e\right.\right.}{4d^4}$$

$$= \frac{2048383B(bc-ad)^6g^3nx}{140b^3d^3}+\frac{2048383B(bc-ad}{280b^2}$$

Mathematica [A] time = 0.67, size = 631, normalized size = 1.32

$$\frac{g^3i^3\left(120d^7(a+bx)^7\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+420d^6(a+bx)^6(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+504d^5(a+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n]),x]
```

```
[Out] (g^3*i^3*(210*d^4*(b*c - a*d)^3*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]) + 504*d^5*(b*c - a*d)^2*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]) + 420*d^6*(b*c - a*d)*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n]) + 120*d^7*(a + b*x)^7*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 35*B*(
b*c - a*d)^4*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 +
2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 42*B*(b*c - a*d)^3*n*(1
2*b*d*(b*c - a*d)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)
*(a + b*x)^3 - 3*d^4*(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]) - 7*B*(b*
c - a*d)^2*n*(60*b*d*(b*c - a*d)^4*x + 30*d^2*(-(b*c) + a*d)^3*(a + b*x)^2
+ 20*d^3*(b*c - a*d)^2*(a + b*x)^3 + 15*d^4*(-(b*c) + a*d)*(a + b*x)^4 + 12
*d^5*(a + b*x)^5 - 60*(b*c - a*d)^5*Log[c + d*x]) + 2*B*(b*c - a*d)*n*(60*b
*d*(b*c - a*d)^5*x - 30*d^2*(b*c - a*d)^4*(a + b*x)^2 + 20*d^3*(b*c - a*d)^
```

```
3*(a + b*x)^3 - 15*d^4*(b*c - a*d)^2*(a + b*x)^4 + 12*d^5*(b*c - a*d)*(a +
b*x)^5 - 10*d^6*(a + b*x)^6 - 60*(b*c - a*d)^6*Log[c + d*x])))/(840*b^4*d^4
)
```

fricas [B] time = 2.59, size = 1336, normalized size = 2.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="fricas")
```

```
[Out] 1/840*(120*A*b^7*d^7*g^3*i^3*x^7 + 6*(35*B*a^4*b^3*c^3*d^4 - 21*B*a^5*b^2*c
^2*d^5 + 7*B*a^6*b*c*d^6 - B*a^7*d^7)*g^3*i^3*n*log(b*x + a) + 6*(B*b^7*c^7
 - 7*B*a*b^6*c^6*d + 21*B*a^2*b^5*c^5*d^2 - 35*B*a^3*b^4*c^4*d^3)*g^3*i^3*n
*log(d*x + c) - 20*((B*b^7*c*d^6 - B*a*b^6*d^7)*g^3*i^3*n - 21*(A*b^7*c*d^6
 + A*a*b^6*d^7)*g^3*i^3)*x^6 - 12*(5*(B*b^7*c^2*d^5 - B*a^2*b^5*d^7)*g^3*i^
3*n - 42*(A*b^7*c^2*d^5 + 3*A*a*b^6*c*d^6 + A*a^2*b^5*d^7)*g^3*i^3)*x^5 - 3
*((17*B*b^7*c^3*d^4 + 49*B*a*b^6*c^2*d^5 - 49*B*a^2*b^5*c*d^6 - 17*B*a^3*b^
4*d^7)*g^3*i^3*n - 70*(A*b^7*c^3*d^4 + 9*A*a*b^6*c^2*d^5 + 9*A*a^2*b^5*c*d^
6 + A*a^3*b^4*d^7)*g^3*i^3)*x^4 - 2*((B*b^7*c^4*d^3 + 98*B*a*b^6*c^3*d^4 -
98*B*a^3*b^4*c*d^6 - B*a^4*b^3*d^7)*g^3*i^3*n - 420*(A*a*b^6*c^3*d^4 + 3*A*
a^2*b^5*c^2*d^5 + A*a^3*b^4*c*d^6)*g^3*i^3)*x^3 + 3*((B*b^7*c^5*d^2 - 7*B*a
*b^6*c^4*d^3 - 84*B*a^2*b^5*c^3*d^4 + 84*B*a^3*b^4*c^2*d^5 + 7*B*a^4*b^3*c*
d^6 - B*a^5*b^2*d^7)*g^3*i^3*n + 420*(A*a^2*b^5*c^3*d^4 + A*a^3*b^4*c^2*d^5
)*g^3*i^3)*x^2 + 6*(140*A*a^3*b^4*c^3*d^4*g^3*i^3 - (B*b^7*c^6*d - 7*B*a*b^
6*c^5*d^2 + 21*B*a^2*b^5*c^4*d^3 - 21*B*a^4*b^3*c^2*d^5 + 7*B*a^5*b^2*c*d^6
 - B*a^6*b*d^7)*g^3*i^3*n)*x + 6*(20*B*b^7*d^7*g^3*i^3*x^7 + 140*B*a^3*b^4*
c^3*d^4*g^3*i^3*x + 70*(B*b^7*c*d^6 + B*a*b^6*d^7)*g^3*i^3*x^6 + 84*(B*b^7*
c^2*d^5 + 3*B*a*b^6*c*d^6 + B*a^2*b^5*d^7)*g^3*i^3*x^5 + 35*(B*b^7*c^3*d^4
+ 9*B*a*b^6*c^2*d^5 + 9*B*a^2*b^5*c*d^6 + B*a^3*b^4*d^7)*g^3*i^3*x^4 + 140*
(B*a*b^6*c^3*d^4 + 3*B*a^2*b^5*c^2*d^5 + B*a^3*b^4*c*d^6)*g^3*i^3*x^3 + 210
*(B*a^2*b^5*c^3*d^4 + B*a^3*b^4*c^2*d^5)*g^3*i^3*x^2)*log(e) + 6*(20*B*b^7*
d^7*g^3*i^3*n*x^7 + 140*B*a^3*b^4*c^3*d^4*g^3*i^3*n*x + 70*(B*b^7*c*d^6 + B
*a*b^6*d^7)*g^3*i^3*n*x^6 + 84*(B*b^7*c^2*d^5 + 3*B*a*b^6*c*d^6 + B*a^2*b^5
*d^7)*g^3*i^3*n*x^5 + 35*(B*b^7*c^3*d^4 + 9*B*a*b^6*c^2*d^5 + 9*B*a^2*b^5*c
*d^6 + B*a^3*b^4*d^7)*g^3*i^3*n*x^4 + 140*(B*a*b^6*c^3*d^4 + 3*B*a^2*b^5*c^
2*d^5 + B*a^3*b^4*c*d^6)*g^3*i^3*n*x^3 + 210*(B*a^2*b^5*c^3*d^4 + B*a^3*b^4
*c^2*d^5)*g^3*i^3*n*x^2)*log((b*x + a)/(d*x + c)))/(b^4*d^4)
```

giac [B] time = 15.02, size = 5502, normalized size = 11.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="giac")
```

```
[Out] 1/840*(6*(B*b^11*c^8*g^3*i*n - 8*B*a*b^10*c^7*d*g^3*i*n - 7*(b*x + a)*B*b^1
0*c^8*d*g^3*i*n/(d*x + c) + 28*B*a^2*b^9*c^6*d^2*g^3*i*n + 56*(b*x + a)*B*a
*b^9*c^7*d^2*g^3*i*n/(d*x + c) + 21*(b*x + a)^2*B*b^9*c^8*d^2*g^3*i*n/(d*x
+ c)^2 - 56*B*a^3*b^8*c^5*d^3*g^3*i*n - 196*(b*x + a)*B*a^2*b^8*c^6*d^3*g^3
*i*n/(d*x + c) - 168*(b*x + a)^2*B*a*b^8*c^7*d^3*g^3*i*n/(d*x + c)^2 - 35*(
b*x + a)^3*B*b^8*c^8*d^3*g^3*i*n/(d*x + c)^3 + 70*B*a^4*b^7*c^4*d^4*g^3*i*n
 + 392*(b*x + a)*B*a^3*b^7*c^5*d^4*g^3*i*n/(d*x + c) + 588*(b*x + a)^2*B*a^
2*b^7*c^6*d^4*g^3*i*n/(d*x + c)^2 + 280*(b*x + a)^3*B*a*b^7*c^7*d^4*g^3*i*n
/(d*x + c)^3 - 56*B*a^5*b^6*c^3*d^5*g^3*i*n - 490*(b*x + a)*B*a^4*b^6*c^4*d
^5*g^3*i*n/(d*x + c) - 1176*(b*x + a)^2*B*a^3*b^6*c^5*d^5*g^3*i*n/(d*x + c)
^2 - 980*(b*x + a)^3*B*a^2*b^6*c^6*d^5*g^3*i*n/(d*x + c)^3 + 28*B*a^6*b^5*c
^2*d^6*g^3*i*n + 392*(b*x + a)*B*a^5*b^5*c^3*d^6*g^3*i*n/(d*x + c) + 1470*(
```

b*x + a)^2*B*a^4*b^5*c^4*d^6*g^3*i*n/(d*x + c)^2 + 1960*(b*x + a)^3*B*a^3*b
^5*c^5*d^6*g^3*i*n/(d*x + c)^3 - 8*B*a^7*b^4*c*d^7*g^3*i*n - 196*(b*x + a)*
B*a^6*b^4*c^2*d^7*g^3*i*n/(d*x + c) - 1176*(b*x + a)^2*B*a^5*b^4*c^3*d^7*g^
3*i*n/(d*x + c)^2 - 2450*(b*x + a)^3*B*a^4*b^4*c^4*d^7*g^3*i*n/(d*x + c)^3
+ B*a^8*b^3*d^8*g^3*i*n + 56*(b*x + a)*B*a^7*b^3*c*d^8*g^3*i*n/(d*x + c) +
588*(b*x + a)^2*B*a^6*b^3*c^2*d^8*g^3*i*n/(d*x + c)^2 + 1960*(b*x + a)^3*B*
a^5*b^3*c^3*d^8*g^3*i*n/(d*x + c)^3 - 7*(b*x + a)*B*a^8*b^2*d^9*g^3*i*n/(d*
x + c) - 168*(b*x + a)^2*B*a^7*b^2*c*d^9*g^3*i*n/(d*x + c)^2 - 980*(b*x + a
)^3*B*a^6*b^2*c^2*d^9*g^3*i*n/(d*x + c)^3 + 21*(b*x + a)^2*B*a^8*b*d^10*g^3
*i*n/(d*x + c)^2 + 280*(b*x + a)^3*B*a^7*b*c*d^10*g^3*i*n/(d*x + c)^3 - 35*
(b*x + a)^3*B*a^8*d^11*g^3*i*n/(d*x + c)^3)*log((b*x + a)/(d*x + c))/(b^7*d
^4 - 7*(b*x + a)*b^6*d^5/(d*x + c) + 21*(b*x + a)^2*b^5*d^6/(d*x + c)^2 - 3
5*(b*x + a)^3*b^4*d^7/(d*x + c)^3 + 35*(b*x + a)^4*b^3*d^8/(d*x + c)^4 - 21
*(b*x + a)^5*b^2*d^9/(d*x + c)^5 + 7*(b*x + a)^6*b*d^10/(d*x + c)^6 - (b*x
+ a)^7*d^11/(d*x + c)^7) + (6*(b*x + a)*B*b^13*c^8*d*g^3*i*n/(d*x + c) - 48
*(b*x + a)*B*a*b^12*c^7*d^2*g^3*i*n/(d*x + c) - 39*(b*x + a)^2*B*b^12*c^8*d
^2*g^3*i*n/(d*x + c)^2 + 168*(b*x + a)*B*a^2*b^11*c^6*d^3*g^3*i*n/(d*x + c)
+ 312*(b*x + a)^2*B*a*b^11*c^7*d^3*g^3*i*n/(d*x + c)^2 + 107*(b*x + a)^3*B
*b^11*c^8*d^3*g^3*i*n/(d*x + c)^3 - 336*(b*x + a)*B*a^3*b^10*c^5*d^4*g^3*i*
n/(d*x + c) - 1092*(b*x + a)^2*B*a^2*b^10*c^6*d^4*g^3*i*n/(d*x + c)^2 - 856
*(b*x + a)^3*B*a*b^10*c^7*d^4*g^3*i*n/(d*x + c)^3 - 107*(b*x + a)^4*B*b^10*
c^8*d^4*g^3*i*n/(d*x + c)^4 + 420*(b*x + a)*B*a^4*b^9*c^4*d^5*g^3*i*n/(d*x
+ c) + 2184*(b*x + a)^2*B*a^3*b^9*c^5*d^5*g^3*i*n/(d*x + c)^2 + 2996*(b*x +
a)^3*B*a^2*b^9*c^6*d^5*g^3*i*n/(d*x + c)^3 + 856*(b*x + a)^4*B*a*b^9*c^7*d
^5*g^3*i*n/(d*x + c)^4 + 39*(b*x + a)^5*B*b^9*c^8*d^5*g^3*i*n/(d*x + c)^5 -
336*(b*x + a)*B*a^5*b^8*c^3*d^6*g^3*i*n/(d*x + c) - 2730*(b*x + a)^2*B*a^4
*b^8*c^4*d^6*g^3*i*n/(d*x + c)^2 - 5992*(b*x + a)^3*B*a^3*b^8*c^5*d^6*g^3*i
*n/(d*x + c)^3 - 2996*(b*x + a)^4*B*a^2*b^8*c^6*d^6*g^3*i*n/(d*x + c)^4 - 3
12*(b*x + a)^5*B*a*b^8*c^7*d^6*g^3*i*n/(d*x + c)^5 - 6*(b*x + a)^6*B*b^8*c^
8*d^6*g^3*i*n/(d*x + c)^6 + 168*(b*x + a)*B*a^6*b^7*c^2*d^7*g^3*i*n/(d*x +
c) + 2184*(b*x + a)^2*B*a^5*b^7*c^3*d^7*g^3*i*n/(d*x + c)^2 + 7490*(b*x + a
)^3*B*a^4*b^7*c^4*d^7*g^3*i*n/(d*x + c)^3 + 5992*(b*x + a)^4*B*a^3*b^7*c^5*
d^7*g^3*i*n/(d*x + c)^4 + 1092*(b*x + a)^5*B*a^2*b^7*c^6*d^7*g^3*i*n/(d*x +
c)^5 + 48*(b*x + a)^6*B*a*b^7*c^7*d^7*g^3*i*n/(d*x + c)^6 - 48*(b*x + a)*B
*a^7*b^6*c*d^8*g^3*i*n/(d*x + c) - 1092*(b*x + a)^2*B*a^6*b^6*c^2*d^8*g^3*i
*n/(d*x + c)^2 - 5992*(b*x + a)^3*B*a^5*b^6*c^3*d^8*g^3*i*n/(d*x + c)^3 - 7
490*(b*x + a)^4*B*a^4*b^6*c^4*d^8*g^3*i*n/(d*x + c)^4 - 2184*(b*x + a)^5*B*
a^3*b^6*c^5*d^8*g^3*i*n/(d*x + c)^5 - 168*(b*x + a)^6*B*a^2*b^6*c^6*d^8*g^3
*i*n/(d*x + c)^6 + 6*(b*x + a)*B*a^8*b^5*d^9*g^3*i*n/(d*x + c) + 312*(b*x +
a)^2*B*a^7*b^5*c*d^9*g^3*i*n/(d*x + c)^2 + 2996*(b*x + a)^3*B*a^6*b^5*c^2*
d^9*g^3*i*n/(d*x + c)^3 + 5992*(b*x + a)^4*B*a^5*b^5*c^3*d^9*g^3*i*n/(d*x +
c)^4 + 2730*(b*x + a)^5*B*a^4*b^5*c^4*d^9*g^3*i*n/(d*x + c)^5 + 336*(b*x +
a)^6*B*a^3*b^5*c^5*d^9*g^3*i*n/(d*x + c)^6 - 39*(b*x + a)^2*B*a^8*b^4*d^10
*g^3*i*n/(d*x + c)^2 - 856*(b*x + a)^3*B*a^7*b^4*c*d^10*g^3*i*n/(d*x + c)^3
- 2996*(b*x + a)^4*B*a^6*b^4*c^2*d^10*g^3*i*n/(d*x + c)^4 - 2184*(b*x + a)
^5*B*a^5*b^4*c^3*d^10*g^3*i*n/(d*x + c)^5 - 420*(b*x + a)^6*B*a^4*b^4*c^4*d
^10*g^3*i*n/(d*x + c)^6 + 107*(b*x + a)^3*B*a^8*b^3*d^11*g^3*i*n/(d*x + c)^
3 + 856*(b*x + a)^4*B*a^7*b^3*c*d^11*g^3*i*n/(d*x + c)^4 + 1092*(b*x + a)^5
*B*a^6*b^3*c^2*d^11*g^3*i*n/(d*x + c)^5 + 336*(b*x + a)^6*B*a^5*b^3*c^3*d^1
1*g^3*i*n/(d*x + c)^6 - 107*(b*x + a)^4*B*a^8*b^2*d^12*g^3*i*n/(d*x + c)^4
- 312*(b*x + a)^5*B*a^7*b^2*c*d^12*g^3*i*n/(d*x + c)^5 - 168*(b*x + a)^6*B*
a^6*b^2*c^2*d^12*g^3*i*n/(d*x + c)^6 + 39*(b*x + a)^5*B*a^8*b*d^13*g^3*i*n/
(d*x + c)^5 + 48*(b*x + a)^6*B*a^7*b*c*d^13*g^3*i*n/(d*x + c)^6 - 6*(b*x +
a)^6*B*a^8*d^14*g^3*i*n/(d*x + c)^6 + 6*A*b^14*c^8*g^3*i + 6*B*b^14*c^8*g^3
*i - 48*A*a*b^13*c^7*d*g^3*i - 48*B*a*b^13*c^7*d*g^3*i - 42*(b*x + a)*A*b^1
3*c^8*d*g^3*i/(d*x + c) - 42*(b*x + a)*B*b^13*c^8*d*g^3*i/(d*x + c) + 168*A
*a^2*b^12*c^6*d^2*g^3*i + 168*B*a^2*b^12*c^6*d^2*g^3*i + 336*(b*x + a)*A*a*
b^12*c^7*d^2*g^3*i/(d*x + c) + 336*(b*x + a)*B*a*b^12*c^7*d^2*g^3*i/(d*x +
c) + 126*(b*x + a)^2*A*b^12*c^8*d^2*g^3*i/(d*x + c)^2 + 126*(b*x + a)^2*B*b

```
^12*c^8*d^2*g^3*i/(d*x + c)^2 - 336*A*a^3*b^11*c^5*d^3*g^3*i - 336*B*a^3*b^
11*c^5*d^3*g^3*i - 1176*(b*x + a)*A*a^2*b^11*c^6*d^3*g^3*i/(d*x + c) - 1176
*(b*x + a)*B*a^2*b^11*c^6*d^3*g^3*i/(d*x + c) - 1008*(b*x + a)^2*A*a*b^11*c
^7*d^3*g^3*i/(d*x + c)^2 - 1008*(b*x + a)^2*B*a*b^11*c^7*d^3*g^3*i/(d*x + c
)^2 - 210*(b*x + a)^3*A*b^11*c^8*d^3*g^3*i/(d*x + c)^3 - 210*(b*x + a)^3*B*
b^11*c^8*d^3*g^3*i/(d*x + c)^3 + 420*A*a^4*b^10*c^4*d^4*g^3*i + 420*B*a^4*b
^10*c^4*d^4*g^3*i + 2352*(b*x + a)*A*a^3*b^10*c^5*d^4*g^3*i/(d*x + c) + 235
2*(b*x + a)*B*a^3*b^10*c^5*d^4*g^3*i/(d*x + c) + 3528*(b*x + a)^2*A*a^2*b^1
0*c^6*d^4*g^3*i/(d*x + c)^2 + 3528*(b*x + a)^2*B*a^2*b^10*c^6*d^4*g^3*i/(d*
x + c)^2 + 1680*(b*x + a)^3*A*a*b^10*c^7*d^4*g^3*i/(d*x + c)^3 + 1680*(b*x
+ a)^3*B*a*b^10*c^7*d^4*g^3*i/(d*x + c)^3 - 336*A*a^5*b^9*c^3*d^5*g^3*i - 3
36*B*a^5*b^9*c^3*d^5*g^3*i - 2940*(b*x + a)*A*a^4*b^9*c^4*d^5*g^3*i/(d*x +
c) - 2940*(b*x + a)*B*a^4*b^9*c^4*d^5*g^3*i/(d*x + c) - 7056*(b*x + a)^2*A*
a^3*b^9*c^5*d^5*g^3*i/(d*x + c)^2 - 7056*(b*x + a)^2*B*a^3*b^9*c^5*d^5*g^3*
i/(d*x + c)^2 - 5880*(b*x + a)^3*A*a^2*b^9*c^6*d^5*g^3*i/(d*x + c)^3 - 5880
*(b*x + a)^3*B*a^2*b^9*c^6*d^5*g^3*i/(d*x + c)^3 + 168*A*a^6*b^8*c^2*d^6*g^
3*i + 168*B*a^6*b^8*c^2*d^6*g^3*i + 2352*(b*x + a)*A*a^5*b^8*c^3*d^6*g^3*i/
(d*x + c) + 2352*(b*x + a)*B*a^5*b^8*c^3*d^6*g^3*i/(d*x + c) + 8820*(b*x +
a)^2*A*a^4*b^8*c^4*d^6*g^3*i/(d*x + c)^2 + 8820*(b*x + a)^2*B*a^4*b^8*c^4*d
^6*g^3*i/(d*x + c)^2 + 11760*(b*x + a)^3*A*a^3*b^8*c^5*d^6*g^3*i/(d*x + c)^
3 + 11760*(b*x + a)^3*B*a^3*b^8*c^5*d^6*g^3*i/(d*x + c)^3 - 48*A*a^7*b^7*c*
d^7*g^3*i - 48*B*a^7*b^7*c*d^7*g^3*i - 1176*(b*x + a)*A*a^6*b^7*c^2*d^7*g^3
*i/(d*x + c) - 1176*(b*x + a)*B*a^6*b^7*c^2*d^7*g^3*i/(d*x + c) - 7056*(b*x
 + a)^2*A*a^5*b^7*c^3*d^7*g^3*i/(d*x + c)^2 - 7056*(b*x + a)^2*B*a^5*b^7*c^
3*d^7*g^3*i/(d*x + c)^2 - 14700*(b*x + a)^3*A*a^4*b^7*c^4*d^7*g^3*i/(d*x +
c)^3 - 14700*(b*x + a)^3*B*a^4*b^7*c^4*d^7*g^3*i/(d*x + c)^3 + 6*A*a^8*b^6*
d^8*g^3*i + 6*B*a^8*b^6*d^8*g^3*i + 336*(b*x + a)*A*a^7*b^6*c*d^8*g^3*i/(d*
x + c) + 336*(b*x + a)*B*a^7*b^6*c*d^8*g^3*i/(d*x + c) + 3528*(b*x + a)^2*A
*a^6*b^6*c^2*d^8*g^3*i/(d*x + c)^2 + 3528*(b*x + a)^2*B*a^6*b^6*c^2*d^8*g^3
*i/(d*x + c)^2 + 11760*(b*x + a)^3*A*a^5*b^6*c^3*d^8*g^3*i/(d*x + c)^3 + 11
760*(b*x + a)^3*B*a^5*b^6*c^3*d^8*g^3*i/(d*x + c)^3 - 42*(b*x + a)*A*a^8*b^
5*d^9*g^3*i/(d*x + c) - 42*(b*x + a)*B*a^8*b^5*d^9*g^3*i/(d*x + c) - 1008*(
b*x + a)^2*A*a^7*b^5*c*d^9*g^3*i/(d*x + c)^2 - 1008*(b*x + a)^2*B*a^7*b^5*c
*d^9*g^3*i/(d*x + c)^2 - 5880*(b*x + a)^3*A*a^6*b^5*c^2*d^9*g^3*i/(d*x + c)
^3 - 5880*(b*x + a)^3*B*a^6*b^5*c^2*d^9*g^3*i/(d*x + c)^3 + 126*(b*x + a)^2
*A*a^8*b^4*d^10*g^3*i/(d*x + c)^2 + 126*(b*x + a)^2*B*a^8*b^4*d^10*g^3*i/(d
*x + c)^2 + 1680*(b*x + a)^3*A*a^7*b^4*c*d^10*g^3*i/(d*x + c)^3 + 1680*(b*x
 + a)^3*B*a^7*b^4*c*d^10*g^3*i/(d*x + c)^3 - 210*(b*x + a)^3*A*a^8*b^3*d^11
*g^3*i/(d*x + c)^3 - 210*(b*x + a)^3*B*a^8*b^3*d^11*g^3*i/(d*x + c)^3)/(b^1
0*d^4 - 7*(b*x + a)*b^9*d^5/(d*x + c) + 21*(b*x + a)^2*b^8*d^6/(d*x + c)^2
- 35*(b*x + a)^3*b^7*d^7/(d*x + c)^3 + 35*(b*x + a)^4*b^6*d^8/(d*x + c)^4 -
 21*(b*x + a)^5*b^5*d^9/(d*x + c)^5 + 7*(b*x + a)^6*b^4*d^10/(d*x + c)^6 -
(b*x + a)^7*b^3*d^11/(d*x + c)^7) + 6*(B*b^8*c^8*g^3*i*n - 8*B*a*b^7*c^7*d*
g^3*i*n + 28*B*a^2*b^6*c^6*d^2*g^3*i*n - 56*B*a^3*b^5*c^5*d^3*g^3*i*n + 70*
B*a^4*b^4*c^4*d^4*g^3*i*n - 56*B*a^5*b^3*c^3*d^5*g^3*i*n + 28*B*a^6*b^2*c^2
*d^6*g^3*i*n - 8*B*a^7*b*c*d^7*g^3*i*n + B*a^8*d^8*g^3*i*n)*log(b - (b*x +
a)*d/(d*x + c))/(b^4*d^4) - 6*(B*b^8*c^8*g^3*i*n - 8*B*a*b^7*c^7*d*g^3*i*n
+ 28*B*a^2*b^6*c^6*d^2*g^3*i*n - 56*B*a^3*b^5*c^5*d^3*g^3*i*n + 70*B*a^4*b^
4*c^4*d^4*g^3*i*n - 56*B*a^5*b^3*c^3*d^5*g^3*i*n + 28*B*a^6*b^2*c^2*d^6*g^3
*i*n - 8*B*a^7*b*c*d^7*g^3*i*n + B*a^8*d^8*g^3*i*n)*log((b*x + a)/(d*x + c)
)/(b^4*d^4))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{3} \left(dix+ci\right)^{3} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)

maxima [B] time = 1.89, size = 2901, normalized size = 6.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="maxima")
```

```
[Out] 1/7*B*b^3*d^3*g^3*i^3*x^7*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/7*A*b^
3*d^3*g^3*i^3*x^7 + 1/2*B*b^3*c*d^2*g^3*i^3*x^6*log(e*(b*x/(d*x + c) + a/(d
*x + c))^n) + 1/2*B*a*b^2*d^3*g^3*i^3*x^6*log(e*(b*x/(d*x + c) + a/(d*x + c
))^n) + 1/2*A*b^3*c*d^2*g^3*i^3*x^6 + 1/2*A*a*b^2*d^3*g^3*i^3*x^6 + 3/5*B*b
^3*c^2*d*g^3*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 9/5*B*a*b^2*c
*d^2*g^3*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/5*B*a^2*b*d^3*g
^3*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/5*A*b^3*c^2*d*g^3*i^3
*x^5 + 9/5*A*a*b^2*c*d^2*g^3*i^3*x^5 + 3/5*A*a^2*b*d^3*g^3*i^3*x^5 + 1/4*B*
b^3*c^3*g^3*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 9/4*B*a*b^2*c^
2*d*g^3*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 9/4*B*a^2*b*c*d^2*
g^3*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*B*a^3*d^3*g^3*i^3*
x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A*b^3*c^3*g^3*i^3*x^4 + 9/
4*A*a*b^2*c^2*d*g^3*i^3*x^4 + 9/4*A*a^2*b*c*d^2*g^3*i^3*x^4 + 1/4*A*a^3*d^3
*g^3*i^3*x^4 + B*a*b^2*c^3*g^3*i^3*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^
n) + 3*B*a^2*b*c^2*d*g^3*i^3*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + B
*a^3*c*d^2*g^3*i^3*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*a*b^2*c^3
*g^3*i^3*x^3 + 3*A*a^2*b*c^2*d*g^3*i^3*x^3 + A*a^3*c*d^2*g^3*i^3*x^3 + 3/2*
B*a^2*b*c^3*g^3*i^3*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*B*a^3*
c^2*d*g^3*i^3*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*A*a^2*b*c^3*
g^3*i^3*x^2 + 3/2*A*a^3*c^2*d*g^3*i^3*x^2 + 1/420*B*b^3*d^3*g^3*i^3*n*(60*a
^7*log(b*x + a)/b^7 - 60*c^7*log(d*x + c)/d^7 - (10*(b^6*c*d^5 - a*b^5*d^6)
*x^6 - 12*(b^6*c^2*d^4 - a^2*b^4*d^6)*x^5 + 15*(b^6*c^3*d^3 - a^3*b^3*d^6)*
x^4 - 20*(b^6*c^4*d^2 - a^4*b^2*d^6)*x^3 + 30*(b^6*c^5*d - a^5*b*d^6)*x^2 -
 60*(b^6*c^6 - a^6*d^6)*x)/(b^6*d^6)) - 1/120*B*b^3*c*d^2*g^3*i^3*n*(60*a^6
*log(b*x + a)/b^6 - 60*c^6*log(d*x + c)/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5)*x
^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^
3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5)) -
 1/120*B*a*b^2*d^3*g^3*i^3*n*(60*a^6*log(b*x + a)/b^6 - 60*c^6*log(d*x + c)
/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4
 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60
*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5)) + 1/20*B*b^3*c^2*d*g^3*i^3*n*(12*a^5*log
(b*x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 -
4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4
*c^4 - a^4*d^4)*x)/(b^4*d^4)) + 3/20*B*a*b^2*c*d^2*g^3*i^3*n*(12*a^5*log(b*
x + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(
b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^
4 - a^4*d^4)*x)/(b^4*d^4)) + 1/20*B*a^2*b*d^3*g^3*i^3*n*(12*a^5*log(b*x + a
)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c
^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a
^4*d^4)*x)/(b^4*d^4)) - 1/24*B*b^3*c^3*g^3*i^3*n*(6*a^4*log(b*x + a)/b^4 -
6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^
2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 3/8*B*a*b^2*c^2*d*g^3*
i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*
b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^
3*d^3)) - 3/8*B*a^2*b*c*d^2*g^3*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d
*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^
2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/24*B*a^3*d^3*g^3*i^3*n*(6*a^4*l
og(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 -
 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/2*
B*a*b^2*c^3*g^3*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((
```

```
b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 3/2*B*a^2*b*
c^2*d*g^3*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*
d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 1/2*B*a^3*c*d^2*g^
3*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*
d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 3/2*B*a^2*b*c^3*g^3*i^3*n*
(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 3/2*B
*a^3*c^2*d*g^3*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c -
a*d)*x/(b*d)) + B*a^3*c^3*g^3*i^3*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) +
 B*a^3*c^3*g^3*i^3*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*a^3*c^3*g^3
*i^3*x
```

mupad [B] time = 6.56, size = 4476, normalized size = 9.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)),
x)
```

```
[Out] x^4*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3 + 3*B*a^3*d^3*n - 3*B*b^3*c^3*n
+ 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*a*b^2*c^2*d*n + 6*B*a^2*b*c*d
^2*n))/20 + ((140*a*d + 140*b*c)*((((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c +
 B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*
a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a
^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(560*b*
d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/7 -
(A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(4*b*d)) + x^3*((g^3*i^3*(4*A
*a^4*d^4 + 4*A*b^4*c^4 + B*a^4*d^4*n - B*b^4*c^4*n + 144*A*a^2*b^2*c^2*d^2
+ 64*A*a*b^3*c^3*d + 64*A*a^3*b*c*d^3 - 8*B*a*b^3*c^3*d*n + 8*B*a^3*b*c*d^3
*n))/(12*b*d) - ((140*a*d + 140*b*c)*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3
 + 3*B*a^3*d^3*n - 3*B*b^3*c^3*n + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 -
6*B*a*b^2*c^2*d*n + 6*B*a^2*b*c*d^2*n))/5 + ((140*a*d + 140*b*c)*((((b^2*d^
2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3
*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(1
2*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 +
 A*a*b^2*c*d^2*g^3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*
A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140
))/(b*d)))/(420*b*d) + (a*c*((((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*
d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d +
 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^
2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(3*b*d)) + x
^6*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/42 - (A*b^2
*d^2*g^3*i^3*(140*a*d + 140*b*c))/840) - x^2*(((140*a*d + 140*b*c)*((g^3*i^
3*(4*A*a^4*d^4 + 4*A*b^4*c^4 + B*a^4*d^4*n - B*b^4*c^4*n + 144*A*a^2*b^2*c^
2*d^2 + 64*A*a*b^3*c^3*d + 64*A*a^3*b*c*d^3 - 8*B*a*b^3*c^3*d*n + 8*B*a^3*b
*c*d^3*n))/(4*b*d) - ((140*a*d + 140*b*c)*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^
3*c^3 + 3*B*a^3*d^3*n - 3*B*b^3*c^3*n + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d
^2 - 6*B*a*b^2*c^2*d*n + 6*B*a^2*b*c*d^2*n))/5 + ((140*a*d + 140*b*c)*((((b
^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^
3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i
^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d)
)/2 + A*a*b^2*c*d^2*g^3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d
+ 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c)
)/140))/(b*d)))/(140*b*d) + (a*c*((((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c +
 B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*
a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a
^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(b*d)))
/(280*b*d) + (a*c*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3 + 3*B*a^3*d^3*n -
3*B*b^3*c^3*n + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*a*b^2*c^2*d*n +
 6*B*a^2*b*c*d^2*n))/5 + ((140*a*d + 140*b*c)*((((b^2*d^2*g^3*i^3*(28*A*a*d
```

```
 + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c
))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*
b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*
i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B
*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(b*d)))/(2*b*d)
- (a*c*g^3*i^3*(4*A*a^3*d^3 + 4*A*b^3*c^3 + B*a^3*d^3*n - B*b^3*c^3*n + 24*
A*a*b^2*c^2*d + 24*A*a^2*b*c*d^2 - 2*B*a*b^2*c^2*d*n + 2*B*a^2*b*c*d^2*n))/
(2*b*d)) - x^5*((((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n
))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(7
00*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c
^2*n + 32*A*a*b*c*d))/10 + (A*a*b^2*c*d^2*g^3*i^3)/5) + x*(((140*a*d + 140*
b*c)*(((140*a*d + 140*b*c)*((g^3*i^3*(4*A*a^4*d^4 + 4*A*b^4*c^4 + B*a^4*d^4
*n - B*b^4*c^4*n + 144*A*a^2*b^2*c^2*d^2 + 64*A*a*b^3*c^3*d + 64*A*a^3*b*c*
d^3 - 8*B*a*b^3*c^3*d*n + 8*B*a^3*b*c*d^3*n))/(4*b*d) - ((140*a*d + 140*b*c
)*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3 + 3*B*a^3*d^3*n - 3*B*b^3*c^3*n +
120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*a*b^2*c^2*d*n + 6*B*a^2*b*c*d^2
*n))/5 + ((140*a*d + 140*b*c)*((((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*
a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d
 + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*
d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(140*b*d)
- (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*
b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(b*d)))/(140*b*d) + (a*c*((((b^2
*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*
i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3
*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/
2 + A*a*b^2*c*d^2*g^3*i^3))/(b*d)))/(140*b*d) + (a*c*((g^3*i^3*(20*A*a^3*d^
3 + 20*A*b^3*c^3 + 3*B*a^3*d^3*n - 3*B*b^3*c^3*n + 120*A*a*b^2*c^2*d + 120*
A*a^2*b*c*d^2 - 6*B*a*b^2*c^2*d*n + 6*B*a^2*b*c*d^2*n))/5 + ((140*a*d + 140
*b*c)*((((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A
*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) -
 (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 32
*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3
*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d
 + 140*b*c))/140))/(b*d)))/(b*d) - (a*c*g^3*i^3*(4*A*a^3*d^3 + 4*A*b^3*c^3
+ B*a^3*d^3*n - B*b^3*c^3*n + 24*A*a*b^2*c^2*d + 24*A*a^2*b*c*d^2 - 2*B*a*b
^2*c^2*d*n + 2*B*a^2*b*c*d^2*n))/(b*d)))/(140*b*d) - (a*c*((g^3*i^3*(4*A*a^
4*d^4 + 4*A*b^4*c^4 + B*a^4*d^4*n - B*b^4*c^4*n + 144*A*a^2*b^2*c^2*d^2 + 6
4*A*a*b^3*c^3*d + 64*A*a^3*b*c*d^3 - 8*B*a*b^3*c^3*d*n + 8*B*a^3*b*c*d^3*n)
)/(4*b*d) - ((140*a*d + 140*b*c)*((g^3*i^3*(20*A*a^3*d^3 + 20*A*b^3*c^3 + 3
*B*a^3*d^3*n - 3*B*b^3*c^3*n + 120*A*a*b^2*c^2*d + 120*A*a^2*b*c*d^2 - 6*B*
a*b^2*c^2*d*n + 6*B*a^2*b*c*d^2*n))/5 + ((140*a*d + 140*b*c)*((((b^2*d^2*g^
3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(14
0*a*d + 140*b*c))/140)*(140*a*d + 140*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*
a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 32*A*a*b*c*d))/2 + A*a
*b^2*c*d^2*g^3*i^3))/(140*b*d) - (a*c*((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*
c + B*a*d*n - B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140))/(
b*d)))/(140*b*d) + (a*c*((((b^2*d^2*g^3*i^3*(28*A*a*d + 28*A*b*c + B*a*d*n
- B*b*c*n))/7 - (A*b^2*d^2*g^3*i^3*(140*a*d + 140*b*c))/140)*(140*a*d + 140
*b*c))/(140*b*d) - (b*d*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + B*a^2*d^2*n
- B*b^2*c^2*n + 32*A*a*b*c*d))/2 + A*a*b^2*c*d^2*g^3*i^3))/(b*d)))/(b*d) +
(a^2*c^2*g^3*i^3*(12*A*a^2*d^2 + 12*A*b^2*c^2 + 3*B*a^2*d^2*n - 3*B*b^2*c^2
*n + 32*A*a*b*c*d))/(2*b*d)) + log(e*((a + b*x)/(c + d*x))^n)*((B*g^3*i^3*x
^4*(a^3*d^3 + b^3*c^3 + 9*a*b^2*c^2*d + 9*a^2*b*c*d^2))/4 + B*a^3*c^3*g^3*i
^3*x + (B*b^3*d^3*g^3*i^3*x^7)/7 + (3*B*a^2*c^2*g^3*i^3*x^2*(a*d + b*c))/2
+ (B*b^2*d^2*g^3*i^3*x^6*(a*d + b*c))/2 + B*a*c*g^3*i^3*x^3*(a^2*d^2 + b^2*
c^2 + 3*a*b*c*d) + (3*B*b*d*g^3*i^3*x^5*(a^2*d^2 + b^2*c^2 + 3*a*b*c*d))/5)
 - (log(a + b*x)*(B*a^7*d^3*g^3*i^3*n - 35*B*a^4*b^3*c^3*g^3*i^3*n + 21*B*a
^5*b^2*c^2*d*g^3*i^3*n - 7*B*a^6*b*c*d^2*g^3*i^3*n))/(140*b^4) + (log(c + d
*x)*(B*b^3*c^7*g^3*i^3*n - 35*B*a^3*c^4*d^3*g^3*i^3*n + 21*B*a^2*b*c^5*d^2*
```

```
g^3*i^3*n - 7*B*a*b^2*c^6*d*g^3*i^3*n))/(140*d^4) + (A*b^3*d^3*g^3*i^3*x^7)
/7
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Timed out
```

3.128 $\int (ag+bgx)^2(ci+dix)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\,dx$

Optimal. Leaf size=387

$$\frac{b^2g^2i^3(c+dx)^6\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{6d^3}+\frac{g^2i^3(c+dx)^4(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4d^3}-\frac{2bg^2i^3(c+dx)^5(bc}{}$$

```
[Out] -1/60*B*(-a*d+b*c)^5*g^2*i^3*n*x/b^3/d^2-1/120*B*(-a*d+b*c)^4*g^2*i^3*n*(d*
x+c)^2/b^2/d^3-1/180*B*(-a*d+b*c)^3*g^2*i^3*n*(d*x+c)^3/b/d^3+7/120*B*(-a*d
+b*c)^2*g^2*i^3*n*(d*x+c)^4/d^3-1/30*b*B*(-a*d+b*c)*g^2*i^3*n*(d*x+c)^5/d^3
+1/4*(-a*d+b*c)^2*g^2*i^3*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^3-2/5
*b*(-a*d+b*c)*g^2*i^3*(d*x+c)^5*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^3+1/6*b^2
*g^2*i^3*(d*x+c)^6*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^3-1/60*B*(-a*d+b*c)^6*
g^2*i^3*n*ln((b*x+a)/(d*x+c))/b^4/d^3-1/60*B*(-a*d+b*c)^6*g^2*i^3*n*ln(d*x+
c)/b^4/d^3
```

Rubi [A] time = 0.70, antiderivative size = 345, normalized size of antiderivative = 0.89, number of steps used = 14, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$, Rules used = {2528, 2525, 12, 43}

$$\frac{b^2g^2i^3(c+dx)^6\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{6d^3}+\frac{g^2i^3(c+dx)^4(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4d^3}-\frac{2bg^2i^3(c+dx)^5(bc}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),
x]
```

```
[Out] -(B*(b*c - a*d)^5*g^2*i^3*n*x)/(60*b^3*d^2) - (B*(b*c - a*d)^4*g^2*i^3*n*(c
 + d*x)^2)/(120*b^2*d^3) - (B*(b*c - a*d)^3*g^2*i^3*n*(c + d*x)^3)/(180*b*d
^3) + (7*B*(b*c - a*d)^2*g^2*i^3*n*(c + d*x)^4)/(120*d^3) - (b*B*(b*c - a*d
)*g^2*i^3*n*(c + d*x)^5)/(30*d^3) - (B*(b*c - a*d)^6*g^2*i^3*n*Log[a + b*x]
)/(60*b^4*d^3) + ((b*c - a*d)^2*g^2*i^3*(c + d*x)^4*(A + B*Log[e*((a + b*x)
/(c + d*x))^n]))/(4*d^3) - (2*b*(b*c - a*d)*g^2*i^3*(c + d*x)^5*(A + B*Log[
e*((a + b*x)/(c + d*x))^n]))/(5*d^3) + (b^2*g^2*i^3*(c + d*x)^6*(A + B*Log[
e*((a + b*x)/(c + d*x))^n]))/(6*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (128c+128dx)^3(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx=\int\left(\frac{(-bc+ad)^2g^2(128c+128dx)^3\left(A+B\log\left(e\left(\right.\right.\right.}{d^2}\right.$$

$$=\frac{\left(b^2g^2\right)\int(128c+128dx)^5\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{16384d^2}$$

$$=\frac{524288(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{d^3}$$

$$=\frac{524288(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{d^3}$$

$$=\frac{524288(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{d^3}$$

$$=-\frac{524288B(bc-ad)^5g^2nx}{15b^3d^2}-\frac{262144B(bc-ad)^4g^2}{15b^2d^3}$$

Mathematica [A] time = 0.34, size = 441, normalized size = 1.14

$$\frac{g^2i^3\left(60b^6(c+dx)^6\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-144b^5(c+dx)^5(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+90b^4(c+dx)^4(b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n]),x]
```

```
[Out] (g^2*i^3*(-15*B*(b*c - a*d)^3*n*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*
(c + d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]) + 12*B*(b*c
 - a*d)^2*n*(12*b*d*(b*c - a*d)^3*x + 6*b^2*(b*c - a*d)^2*(c + d*x)^2 + 4*b
^3*(b*c - a*d)*(c + d*x)^3 + 3*b^4*(c + d*x)^4 + 12*(b*c - a*d)^4*Log[a + b
*x]) - B*(b*c - a*d)*n*(60*b*d*(b*c - a*d)^4*x + 30*b^2*(b*c - a*d)^3*(c +
d*x)^2 + 20*b^3*(b*c - a*d)^2*(c + d*x)^3 + 15*b^4*(b*c - a*d)*(c + d*x)^4
+ 12*b^5*(c + d*x)^5 + 60*(b*c - a*d)^5*Log[a + b*x]) + 90*b^4*(b*c - a*d)^
2*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 144*b^5*(b*c - a*d)*
(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 60*b^6*(c + d*x)^6*(A
+ B*Log[e*((a + b*x)/(c + d*x))^n])))/(360*b^4*d^3)
```

fricas [B] time = 1.50, size = 1075, normalized size = 2.78

$$\frac{60\,Ab^6d^6g^2i^3x^6+6\left(20\,Ba^3b^3c^3d^3-15\,Ba^4b^2c^2d^4+6\,Ba^5bcd^5-Ba^6d^6\right)g^2i^3n\log\left(bx+a\right)-6\left(Bb^6c^6-6\,Bab^5c^5d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="fricas")
```

```
[Out] 1/360*(60*A*b^6*d^6*g^2*i^3*x^6 + 6*(20*B*a^3*b^3*c^3*d^3 - 15*B*a^4*b^2*c^
2*d^4 + 6*B*a^5*b*c*d^5 - B*a^6*d^6)*g^2*i^3*n*log(b*x + a) - 6*(B*b^6*c^6
- 6*B*a*b^5*c^5*d + 15*B*a^2*b^4*c^4*d^2)*g^2*i^3*n*log(d*x + c) - 12*((B*b
^6*c*d^5 - B*a*b^5*d^6)*g^2*i^3*n - 6*(3*A*b^6*c*d^5 + 2*A*a*b^5*d^6)*g^2*i
^3)*x^5 - 3*((13*B*b^6*c^2*d^4 - 6*B*a*b^5*c*d^5 - 7*B*a^2*b^4*d^6)*g^2*i^3
*n - 30*(3*A*b^6*c^2*d^4 + 6*A*a*b^5*c*d^5 + A*a^2*b^4*d^6)*g^2*i^3)*x^4 -
2*((19*B*b^6*c^3*d^3 + 21*B*a*b^5*c^2*d^4 - 39*B*a^2*b^4*c*d^5 - B*a^3*b^3*
d^6)*g^2*i^3*n - 60*(A*b^6*c^3*d^3 + 6*A*a*b^5*c^2*d^4 + 3*A*a^2*b^4*c*d^5)
*g^2*i^3)*x^3 - 3*((B*b^6*c^4*d^2 + 34*B*a*b^5*c^3*d^3 - 30*B*a^2*b^4*c^2*d
^4 - 6*B*a^3*b^3*c*d^5 + B*a^4*b^2*d^6)*g^2*i^3*n - 60*(2*A*a*b^5*c^3*d^3 +
 3*A*a^2*b^4*c^2*d^4)*g^2*i^3)*x^2 + 6*(60*A*a^2*b^4*c^3*d^3*g^2*i^3 + (B*b
^6*c^5*d - 6*B*a*b^5*c^4*d^2 - 5*B*a^2*b^4*c^3*d^3 + 15*B*a^3*b^3*c^2*d^4 -
 6*B*a^4*b^2*c*d^5 + B*a^5*b*d^6)*g^2*i^3*n)*x + 6*(10*B*b^6*d^6*g^2*i^3*x^
6 + 60*B*a^2*b^4*c^3*d^3*g^2*i^3*x + 12*(3*B*b^6*c*d^5 + 2*B*a*b^5*d^6)*g^2
*i^3*x^5 + 15*(3*B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5 + B*a^2*b^4*d^6)*g^2*i^3*x
^4 + 20*(B*b^6*c^3*d^3 + 6*B*a*b^5*c^2*d^4 + 3*B*a^2*b^4*c*d^5)*g^2*i^3*x^3
 + 30*(2*B*a*b^5*c^3*d^3 + 3*B*a^2*b^4*c^2*d^4)*g^2*i^3*x^2)*log(e) + 6*(10
*B*b^6*d^6*g^2*i^3*n*x^6 + 60*B*a^2*b^4*c^3*d^3*g^2*i^3*n*x + 12*(3*B*b^6*c
*d^5 + 2*B*a*b^5*d^6)*g^2*i^3*n*x^5 + 15*(3*B*b^6*c^2*d^4 + 6*B*a*b^5*c*d^5
 + B*a^2*b^4*d^6)*g^2*i^3*n*x^4 + 20*(B*b^6*c^3*d^3 + 6*B*a*b^5*c^2*d^4 + 3
*B*a^2*b^4*c*d^5)*g^2*i^3*n*x^3 + 30*(2*B*a*b^5*c^3*d^3 + 3*B*a^2*b^4*c^2*d
^4)*g^2*i^3*n*x^2)*log((b*x + a)/(d*x + c)))/(b^4*d^3)
```

giac [B] time = 10.15, size = 3980, normalized size = 10.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="giac")
```

```
[Out] -1/360*(6*(B*b^9*c^7*g^2*i*n - 7*B*a*b^8*c^6*d*g^2*i*n - 6*(b*x + a)*B*b^8*
c^7*d*g^2*i*n/(d*x + c) + 21*B*a^2*b^7*c^5*d^2*g^2*i*n + 42*(b*x + a)*B*a*b
^7*c^6*d^2*g^2*i*n/(d*x + c) + 15*(b*x + a)^2*B*b^7*c^7*d^2*g^2*i*n/(d*x +
c)^2 - 35*B*a^3*b^6*c^4*d^3*g^2*i*n - 126*(b*x + a)*B*a^2*b^6*c^5*d^3*g^2*i
*n/(d*x + c) - 105*(b*x + a)^2*B*a*b^6*c^6*d^3*g^2*i*n/(d*x + c)^2 + 35*B*a
^4*b^5*c^3*d^4*g^2*i*n + 210*(b*x + a)*B*a^3*b^5*c^4*d^4*g^2*i*n/(d*x + c)
+ 315*(b*x + a)^2*B*a^2*b^5*c^5*d^4*g^2*i*n/(d*x + c)^2 - 21*B*a^5*b^4*c^2*
d^5*g^2*i*n - 210*(b*x + a)*B*a^4*b^4*c^3*d^5*g^2*i*n/(d*x + c) - 525*(b*x
+ a)^2*B*a^3*b^4*c^4*d^5*g^2*i*n/(d*x + c)^2 + 7*B*a^6*b^3*c*d^6*g^2*i*n +
126*(b*x + a)*B*a^5*b^3*c^2*d^6*g^2*i*n/(d*x + c) + 525*(b*x + a)^2*B*a^4*b
^3*c^3*d^6*g^2*i*n/(d*x + c)^2 - B*a^7*b^2*d^7*g^2*i*n - 42*(b*x + a)*B*a^6
*b^2*c*d^7*g^2*i*n/(d*x + c) - 315*(b*x + a)^2*B*a^5*b^2*c^2*d^7*g^2*i*n/(d
*x + c)^2 + 6*(b*x + a)*B*a^7*b*d^8*g^2*i*n/(d*x + c) + 105*(b*x + a)^2*B*a
^6*b*c*d^8*g^2*i*n/(d*x + c)^2 - 15*(b*x + a)^2*B*a^7*d^9*g^2*i*n/(d*x + c)
^2)*log((b*x + a)/(d*x + c))/(b^6*d^3 - 6*(b*x + a)*b^5*d^4/(d*x + c) + 15*
(b*x + a)^2*b^4*d^5/(d*x + c)^2 - 20*(b*x + a)^3*b^3*d^6/(d*x + c)^3 + 15*(
b*x + a)^4*b^2*d^7/(d*x + c)^4 - 6*(b*x + a)^5*b*d^8/(d*x + c)^5 + (b*x + a
)^6*d^9/(d*x + c)^6) - (2*B*b^12*c^7*g^2*i*n - 14*B*a*b^11*c^6*d*g^2*i*n -
18*(b*x + a)*B*b^11*c^7*d*g^2*i*n/(d*x + c) + 42*B*a^2*b^10*c^5*d^2*g^2*i*n
 + 126*(b*x + a)*B*a*b^10*c^6*d^2*g^2*i*n/(d*x + c) + 63*(b*x + a)^2*B*b^10
*c^7*d^2*g^2*i*n/(d*x + c)^2 - 70*B*a^3*b^9*c^4*d^3*g^2*i*n - 378*(b*x + a)
*B*a^2*b^9*c^5*d^3*g^2*i*n/(d*x + c) - 441*(b*x + a)^2*B*a*b^9*c^6*d^3*g^2*
i*n/(d*x + c)^2 - 74*(b*x + a)^3*B*b^9*c^7*d^3*g^2*i*n/(d*x + c)^3 + 70*B*a
^4*b^8*c^3*d^4*g^2*i*n + 630*(b*x + a)*B*a^3*b^8*c^4*d^4*g^2*i*n/(d*x + c)
```

+ 1323*(b*x + a)^2*B*a^2*b^8*c^5*d^4*g^2*i*n/(d*x + c)^2 + 518*(b*x + a)^3*
B*a*b^8*c^6*d^4*g^2*i*n/(d*x + c)^3 + 33*(b*x + a)^4*B*b^8*c^7*d^4*g^2*i*n/
(d*x + c)^4 - 42*B*a^5*b^7*c^2*d^5*g^2*i*n - 630*(b*x + a)*B*a^4*b^7*c^3*d^
5*g^2*i*n/(d*x + c) - 2205*(b*x + a)^2*B*a^3*b^7*c^4*d^5*g^2*i*n/(d*x + c)^
2 - 1554*(b*x + a)^3*B*a^2*b^7*c^5*d^5*g^2*i*n/(d*x + c)^3 - 231*(b*x + a)^
4*B*a*b^7*c^6*d^5*g^2*i*n/(d*x + c)^4 - 6*(b*x + a)^5*B*b^7*c^7*d^5*g^2*i*n
/(d*x + c)^5 + 14*B*a^6*b^6*c*d^6*g^2*i*n + 378*(b*x + a)*B*a^5*b^6*c^2*d^6
*g^2*i*n/(d*x + c) + 2205*(b*x + a)^2*B*a^4*b^6*c^3*d^6*g^2*i*n/(d*x + c)^2
 + 2590*(b*x + a)^3*B*a^3*b^6*c^4*d^6*g^2*i*n/(d*x + c)^3 + 693*(b*x + a)^4
*B*a^2*b^6*c^5*d^6*g^2*i*n/(d*x + c)^4 + 42*(b*x + a)^5*B*a*b^6*c^6*d^6*g^2
*i*n/(d*x + c)^5 - 2*B*a^7*b^5*d^7*g^2*i*n - 126*(b*x + a)*B*a^6*b^5*c*d^7*
g^2*i*n/(d*x + c) - 1323*(b*x + a)^2*B*a^5*b^5*c^2*d^7*g^2*i*n/(d*x + c)^2
 - 2590*(b*x + a)^3*B*a^4*b^5*c^3*d^7*g^2*i*n/(d*x + c)^3 - 1155*(b*x + a)^4
*B*a^3*b^5*c^4*d^7*g^2*i*n/(d*x + c)^4 - 126*(b*x + a)^5*B*a^2*b^5*c^5*d^7*
g^2*i*n/(d*x + c)^5 + 18*(b*x + a)*B*a^7*b^4*d^8*g^2*i*n/(d*x + c) + 441*(b
*x + a)^2*B*a^6*b^4*c*d^8*g^2*i*n/(d*x + c)^2 + 1554*(b*x + a)^3*B*a^5*b^4*
c^2*d^8*g^2*i*n/(d*x + c)^3 + 1155*(b*x + a)^4*B*a^4*b^4*c^3*d^8*g^2*i*n/(d
x + c)^4 + 210(b*x + a)^5*B*a^3*b^4*c^4*d^8*g^2*i*n/(d*x + c)^5 - 63*(b*x
 + a)^2*B*a^7*b^3*d^9*g^2*i*n/(d*x + c)^2 - 518*(b*x + a)^3*B*a^6*b^3*c*d^9
*g^2*i*n/(d*x + c)^3 - 693*(b*x + a)^4*B*a^5*b^3*c^2*d^9*g^2*i*n/(d*x + c)^
4 - 210*(b*x + a)^5*B*a^4*b^3*c^3*d^9*g^2*i*n/(d*x + c)^5 + 74*(b*x + a)^3*
B*a^7*b^2*d^10*g^2*i*n/(d*x + c)^3 + 231*(b*x + a)^4*B*a^6*b^2*c*d^10*g^2*i
*n/(d*x + c)^4 + 126*(b*x + a)^5*B*a^5*b^2*c^2*d^10*g^2*i*n/(d*x + c)^5 - 3
3*(b*x + a)^4*B*a^7*b*d^11*g^2*i*n/(d*x + c)^4 - 42*(b*x + a)^5*B*a^6*b*c*d
^11*g^2*i*n/(d*x + c)^5 + 6*(b*x + a)^5*B*a^7*d^12*g^2*i*n/(d*x + c)^5 - 6*
A*b^12*c^7*g^2*i - 6*B*b^12*c^7*g^2*i + 42*A*a*b^11*c^6*d*g^2*i + 42*B*a*b^
11*c^6*d*g^2*i + 36*(b*x + a)*A*b^11*c^7*d*g^2*i/(d*x + c) + 36*(b*x + a)*B
*b^11*c^7*d*g^2*i/(d*x + c) - 126*A*a^2*b^10*c^5*d^2*g^2*i - 126*B*a^2*b^10
*c^5*d^2*g^2*i - 252*(b*x + a)*A*a*b^10*c^6*d^2*g^2*i/(d*x + c) - 252*(b*x
+ a)*B*a*b^10*c^6*d^2*g^2*i/(d*x + c) - 90*(b*x + a)^2*A*b^10*c^7*d^2*g^2*i
/(d*x + c)^2 - 90*(b*x + a)^2*B*b^10*c^7*d^2*g^2*i/(d*x + c)^2 + 210*A*a^3*
b^9*c^4*d^3*g^2*i + 210*B*a^3*b^9*c^4*d^3*g^2*i + 756*(b*x + a)*A*a^2*b^9*c
^5*d^3*g^2*i/(d*x + c) + 756*(b*x + a)*B*a^2*b^9*c^5*d^3*g^2*i/(d*x + c) +
630*(b*x + a)^2*A*a*b^9*c^6*d^3*g^2*i/(d*x + c)^2 + 630*(b*x + a)^2*B*a*b^9
*c^6*d^3*g^2*i/(d*x + c)^2 - 210*A*a^4*b^8*c^3*d^4*g^2*i - 210*B*a^4*b^8*c^
3*d^4*g^2*i - 1260*(b*x + a)*A*a^3*b^8*c^4*d^4*g^2*i/(d*x + c) - 1260*(b*x
+ a)*B*a^3*b^8*c^4*d^4*g^2*i/(d*x + c) - 1890*(b*x + a)^2*A*a^2*b^8*c^5*d^4
*g^2*i/(d*x + c)^2 - 1890*(b*x + a)^2*B*a^2*b^8*c^5*d^4*g^2*i/(d*x + c)^2 +
 126*A*a^5*b^7*c^2*d^5*g^2*i + 126*B*a^5*b^7*c^2*d^5*g^2*i + 1260*(b*x + a)
*A*a^4*b^7*c^3*d^5*g^2*i/(d*x + c) + 1260*(b*x + a)*B*a^4*b^7*c^3*d^5*g^2*i
/(d*x + c) + 3150*(b*x + a)^2*A*a^3*b^7*c^4*d^5*g^2*i/(d*x + c)^2 + 3150*(b
*x + a)^2*B*a^3*b^7*c^4*d^5*g^2*i/(d*x + c)^2 - 42*A*a^6*b^6*c*d^6*g^2*i -
42*B*a^6*b^6*c*d^6*g^2*i - 756*(b*x + a)*A*a^5*b^6*c^2*d^6*g^2*i/(d*x + c)
 - 756*(b*x + a)*B*a^5*b^6*c^2*d^6*g^2*i/(d*x + c) - 3150*(b*x + a)^2*A*a^4*
b^6*c^3*d^6*g^2*i/(d*x + c)^2 - 3150*(b*x + a)^2*B*a^4*b^6*c^3*d^6*g^2*i/(d
*x + c)^2 + 6*A*a^7*b^5*d^7*g^2*i + 6*B*a^7*b^5*d^7*g^2*i + 252*(b*x + a)*A
*a^6*b^5*c*d^7*g^2*i/(d*x + c) + 252*(b*x + a)*B*a^6*b^5*c*d^7*g^2*i/(d*x +
 c) + 1890*(b*x + a)^2*A*a^5*b^5*c^2*d^7*g^2*i/(d*x + c)^2 + 1890*(b*x + a)
^2*B*a^5*b^5*c^2*d^7*g^2*i/(d*x + c)^2 - 36*(b*x + a)*A*a^7*b^4*d^8*g^2*i/(
d*x + c) - 36*(b*x + a)*B*a^7*b^4*d^8*g^2*i/(d*x + c) - 630*(b*x + a)^2*A*a
^6*b^4*c*d^8*g^2*i/(d*x + c)^2 - 630*(b*x + a)^2*B*a^6*b^4*c*d^8*g^2*i/(d*x
 + c)^2 + 90*(b*x + a)^2*A*a^7*b^3*d^9*g^2*i/(d*x + c)^2 + 90*(b*x + a)^2*B
*a^7*b^3*d^9*g^2*i/(d*x + c)^2)/(b^9*d^3 - 6*(b*x + a)*b^8*d^4/(d*x + c) +
15*(b*x + a)^2*b^7*d^5/(d*x + c)^2 - 20*(b*x + a)^3*b^6*d^6/(d*x + c)^3 + 1
5*(b*x + a)^4*b^5*d^7/(d*x + c)^4 - 6*(b*x + a)^5*b^4*d^8/(d*x + c)^5 + (b*
x + a)^6*b^3*d^9/(d*x + c)^6) + 6*(B*b^7*c^7*g^2*i*n - 7*B*a*b^6*c^6*d*g^2*
i*n + 21*B*a^2*b^5*c^5*d^2*g^2*i*n - 35*B*a^3*b^4*c^4*d^3*g^2*i*n + 35*B*a^
4*b^3*c^3*d^4*g^2*i*n - 21*B*a^5*b^2*c^2*d^5*g^2*i*n + 7*B*a^6*b*c*d^6*g^2*
i*n - B*a^7*d^7*g^2*i*n)*log(-b + (b*x + a)*d/(d*x + c))/(b^4*d^3) - 6*(B*b

```
^7*c^7*g^2*i*n - 7*B*a*b^6*c^6*d*g^2*i*n + 21*B*a^2*b^5*c^5*d^2*g^2*i*n - 3
5*B*a^3*b^4*c^4*d^3*g^2*i*n + 35*B*a^4*b^3*c^3*d^4*g^2*i*n - 21*B*a^5*b^2*c
^2*d^5*g^2*i*n + 7*B*a^6*b*c*d^6*g^2*i*n - B*a^7*d^7*g^2*i*n)*log((b*x + a)
/(d*x + c))/(b^4*d^3))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{2}\left(dix+ci\right)^{3}\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [B] time = 1.68, size = 1978, normalized size = 5.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, a
lgorithm="maxima")
```

```
[Out] 1/6*B*b^2*d^3*g^2*i^3*x^6*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/6*A*b^
2*d^3*g^2*i^3*x^6 + 3/5*B*b^2*c*d^2*g^2*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d
*x + c))^n) + 2/5*B*a*b*d^3*g^2*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))
^n) + 3/5*A*b^2*c*d^2*g^2*i^3*x^5 + 2/5*A*a*b*d^3*g^2*i^3*x^5 + 3/4*B*b^2*c
^2*d*g^2*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*B*a*b*c*d^2*g
^2*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*B*a^2*d^3*g^2*i^3*x
^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/4*A*b^2*c^2*d*g^2*i^3*x^4 + 3
/2*A*a*b*c*d^2*g^2*i^3*x^4 + 1/4*A*a^2*d^3*g^2*i^3*x^4 + 1/3*B*b^2*c^3*g^2*
i^3*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*B*a*b*c^2*d*g^2*i^3*x^3*
log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + B*a^2*c*d^2*g^2*i^3*x^3*log(e*(b*x
/(d*x + c) + a/(d*x + c))^n) + 1/3*A*b^2*c^3*g^2*i^3*x^3 + 2*A*a*b*c^2*d*g^
2*i^3*x^3 + A*a^2*c*d^2*g^2*i^3*x^3 + B*a*b*c^3*g^2*i^3*x^2*log(e*(b*x/(d*x
 + c) + a/(d*x + c))^n) + 3/2*B*a^2*c^2*d*g^2*i^3*x^2*log(e*(b*x/(d*x + c)
+ a/(d*x + c))^n) + A*a*b*c^3*g^2*i^3*x^2 + 3/2*A*a^2*c^2*d*g^2*i^3*x^2 - 1
/360*B*b^2*d^3*g^2*i^3*n*(60*a^6*log(b*x + a)/b^6 - 60*c^6*log(d*x + c)/d^6
 + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 2
0*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^
5*c^5 - a^5*d^5)*x)/(b^5*d^5)) + 1/20*B*b^2*c*d^2*g^2*i^3*n*(12*a^5*log(b*x
 + a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b
^4*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4
 - a^4*d^4)*x)/(b^4*d^4)) + 1/30*B*a*b*d^3*g^2*i^3*n*(12*a^5*log(b*x + a)/b
^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*
d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*
d^4)*x)/(b^4*d^4)) - 1/8*B*b^2*c^2*d*g^2*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*
c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*
b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/4*B*a*b*c*d^2*g^2*i^3*
n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*
d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^
3)) - 1/24*B*a^2*d^3*g^2*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)
/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(
b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/6*B*b^2*c^3*g^2*i^3*n*(2*a^3*log(b*x +
 a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 -
a^2*d^2)*x)/(b^2*d^2)) + B*a*b*c^2*d*g^2*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*
c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/
(b^2*d^2)) + 1/2*B*a^2*c*d^2*g^2*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(
d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2
```

```
)) - B*a*b*c^3*g^2*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*
c - a*d)*x/(b*d)) - 3/2*B*a^2*c^2*d*g^2*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*l
og(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*a^2*c^3*g^2*i^3*n*(a*log(b*x + a
)/b - c*log(d*x + c)/d) + B*a^2*c^3*g^2*i^3*x*log(e*(b*x/(d*x + c) + a/(d*x
 + c))^n) + A*a^2*c^3*g^2*i^3*x
```

mupad [B] time = 6.26, size = 2547, normalized size = 6.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)),
x)
```

```
[Out] x^2*((a*c*((((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 -
(A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^
2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^2*c^2*n + 60*A*a
*b*c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(2*b*d) - ((60*a*d + 60*b*
c)*((g^2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 72
*A*a*b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n))
/(4*b) + ((60*a*d + 60*b*c)*((((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*
n - B*b*c*n))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c)
)/(60*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*
b^2*c^2*n + 60*A*a*b*c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(60*b*d)
 - (a*c*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b
*d^2*g^2*i^3*(60*a*d + 60*b*c))/60))/(b*d)))/(120*b*d) + (c*g^2*i^3*(12*A*a
^3*d^3 + 3*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 36*A*a*b^2*c^2*d + 54*
A*a^2*b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))/(6*b*d)) + x^3*((g^
2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 72*A*a*b^
2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n))/(12*b)
 + ((60*a*d + 60*b*c)*((((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*
b*c*n))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*
b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^2*c^
2*n + 60*A*a*b*c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(180*b*d) - (a
*c*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b*d^2*
g^2*i^3*(60*a*d + 60*b*c))/60))/(3*b*d)) - x^4*((((b*d^2*g^2*i^3*(18*A*a*d
+ 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60
)*(60*a*d + 60*b*c))/(240*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 +
2*B*a^2*d^2*n - 3*B*b^2*c^2*n + 60*A*a*b*c*d + B*a*b*c*d*n))/20 + (A*a*b*c*
d^2*g^2*i^3)/4) + x^5*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*
c*n))/30 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/300) - x*(((60*a*d + 60*b*c)
*((a*c*((((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*
b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60*b*d) - (d*g^2*i
^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^2*c^2*n + 60*A*a*b*
c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(b*d) - ((60*a*d + 60*b*c)*((
g^2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 72*A*a*
b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n))/(4*b
) + ((60*a*d + 60*b*c)*((((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B
*b*c*n))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/(60
*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^2*c
^2*n + 60*A*a*b*c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(60*b*d) - (a
*c*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b*d^2*
g^2*i^3*(60*a*d + 60*b*c))/60))/(b*d)))/(60*b*d) + (c*g^2*i^3*(12*A*a^3*d^3
 + 3*A*b^3*c^3 + 3*B*a^3*d^3*n - B*b^3*c^3*n + 36*A*a*b^2*c^2*d + 54*A*a^2*
b*c*d^2 - 5*B*a*b^2*c^2*d*n + 3*B*a^2*b*c*d^2*n))/(3*b*d)))/(60*b*d) + (a*c
*((g^2*i^3*(4*A*a^3*d^3 + 16*A*b^3*c^3 + B*a^3*d^3*n - 3*B*b^3*c^3*n + 72*A
*a*b^2*c^2*d + 48*A*a^2*b*c*d^2 - 3*B*a*b^2*c^2*d*n + 5*B*a^2*b*c*d^2*n))/(
4*b) + ((60*a*d + 60*b*c)*((((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n
- B*b*c*n))/6 - (A*b*d^2*g^2*i^3*(60*a*d + 60*b*c))/60)*(60*a*d + 60*b*c))/
(60*b*d) - (d*g^2*i^3*(15*A*a^2*d^2 + 30*A*b^2*c^2 + 2*B*a^2*d^2*n - 3*B*b^
```

```
2*c^2*n + 60*A*a*b*c*d + B*a*b*c*d*n))/5 + A*a*b*c*d^2*g^2*i^3))/(60*b*d) -
 (a*c*((b*d^2*g^2*i^3*(18*A*a*d + 24*A*b*c + B*a*d*n - B*b*c*n))/6 - (A*b*d
^2*g^2*i^3*(60*a*d + 60*b*c))/60))/(b*d)))/(b*d) - (a*c^2*g^2*i^3*(12*A*a^2
*d^2 + 6*A*b^2*c^2 + 3*B*a^2*d^2*n - 2*B*b^2*c^2*n + 24*A*a*b*c*d - B*a*b*c
*d*n))/(2*b*d)) + log(e*((a + b*x)/(c + d*x))^n)*(B*a^2*c^3*g^2*i^3*x + (B*
c*g^2*i^3*x^3*(3*a^2*d^2 + b^2*c^2 + 6*a*b*c*d))/3 + (B*d*g^2*i^3*x^4*(a^2*
d^2 + 3*b^2*c^2 + 6*a*b*c*d))/4 + (B*b^2*d^3*g^2*i^3*x^6)/6 + (B*a*c^2*g^2*
i^3*x^2*(3*a*d + 2*b*c))/2 + (B*b*d^2*g^2*i^3*x^5*(2*a*d + 3*b*c))/5) - (lo
g(a + b*x)*(B*a^6*d^3*g^2*i^3*n - 20*B*a^3*b^3*c^3*g^2*i^3*n + 15*B*a^4*b^2
*c^2*d*g^2*i^3*n - 6*B*a^5*b*c*d^2*g^2*i^3*n))/(60*b^4) - (log(c + d*x)*(B*
b^2*c^6*g^2*i^3*n + 15*B*a^2*c^4*d^2*g^2*i^3*n - 6*B*a*b*c^5*d*g^2*i^3*n))/
(60*d^3) + (A*b^2*d^3*g^2*i^3*x^6)/6
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
[Out] Timed out
```

3.129 $\int (ag+bgx)(ci+dix)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\,dx$

Optimal. Leaf size=283

$$-\frac{gi^3(c+dx)^4(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4d^2}+\frac{bgi^3(c+dx)^5\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{5d^2}+\frac{Bgi^3n(bc-ad)^5\log\left(\frac{a+b}{c+d}\right.}{20b^4d^2}$$

```
[Out] 1/20*B*(-a*d+b*c)^4*g*i^3*n*x/b^3/d+1/40*B*(-a*d+b*c)^3*g*i^3*n*(d*x+c)^2/b
^2/d^2+1/60*B*(-a*d+b*c)^2*g*i^3*n*(d*x+c)^3/b/d^2-1/20*B*(-a*d+b*c)*g*i^3*
n*(d*x+c)^4/d^2-1/4*(-a*d+b*c)*g*i^3*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^
n))/d^2+1/5*b*g*i^3*(d*x+c)^5*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^2+1/20*B*(-
a*d+b*c)^5*g*i^3*n*ln((b*x+a)/(d*x+c))/b^4/d^2+1/20*B*(-a*d+b*c)^5*g*i^3*n*
ln(d*x+c)/b^4/d^2
```

Rubi [A] time = 0.38, antiderivative size = 243, normalized size of antiderivative = 0.86, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.098, Rules used = {2528, 2525, 12, 43}

$$-\frac{gi^3(c+dx)^4(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4d^2}+\frac{bgi^3(c+dx)^5\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{5d^2}+\frac{Bgi^3n(c+dx)^2(bc-ad)^3}{40b^2d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] (B*(b*c - a*d)^4*g*i^3*n*x)/(20*b^3*d) + (B*(b*c - a*d)^3*g*i^3*n*(c + d*x)
^2)/(40*b^2*d^2) + (B*(b*c - a*d)^2*g*i^3*n*(c + d*x)^3)/(60*b*d^2) - (B*(b
*c - a*d)*g*i^3*n*(c + d*x)^4)/(20*d^2) + (B*(b*c - a*d)^5*g*i^3*n*Log[a +
b*x])/(20*b^4*d^2) - ((b*c - a*d)*g*i^3*(c + d*x)^4*(A + B*Log[e*((a + b*x)
/(c + d*x))^n]))/(4*d^2) + (b*g*i^3*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n]))/(5*d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
```

```
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (129c+129dx)^3(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx = \int\left(\frac{(-bc+ad)g(129c+129dx)^3\left(A+B\log\left(e\left(\right.\right.\right.}{d}\right.$$

$$= \frac{(bg)\int (129c+129dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{129d}$$

$$= -\frac{2146689(bc-ad)g(c+dx)^4\left(A+B\log\left(e\left(\frac{a+}{c+}\right.\right.\right.}{4d^2}$$

$$= -\frac{2146689(bc-ad)g(c+dx)^4\left(A+B\log\left(e\left(\frac{a+}{c+}\right.\right.\right.}{4d^2}$$

$$= -\frac{2146689(bc-ad)g(c+dx)^4\left(A+B\log\left(e\left(\frac{a+}{c+}\right.\right.\right.}{4d^2}$$

$$= \frac{2146689B(bc-ad)^4gnx}{20b^3d} + \frac{2146689B(bc-ad)^3}{40b^2d^2}$$

Mathematica [A] time = 0.23, size = 269, normalized size = 0.95

$$gi^3\left(24b(c+dx)^5\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-30(c+dx)^4(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+\frac{5Bn(bc-ad)^2\left(3b^2(c+dx)\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]),x]
```

```
[Out] (g*i^3*((5*B*(b*c - a*d)^2*n*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c
+ d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]))/b^4 - (2*B*(b
*c - a*d)*n*(12*b*d*(b*c - a*d)^3*x + 6*b^2*(b*c - a*d)^2*(c + d*x)^2 + 4*b
^3*(b*c - a*d)*(c + d*x)^3 + 3*b^4*(c + d*x)^4 + 12*(b*c - a*d)^4*Log[a + b
*x]))/b^4 - 30*(b*c - a*d)*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n
]) + 24*b*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])))/(120*d^2)
```

fricas [B] time = 1.16, size = 721, normalized size = 2.55

$$24\,Ab^5d^5gi^3x^5+6\left(10\,Ba^2b^3c^3d^2-10\,Ba^3b^2c^2d^3+5\,Ba^4bcd^4-Ba^5d^5\right)gi^3n\log(bx+a)+6\left(Bb^5c^5-5\,Bab^4c^4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="fricas")
```

```
[Out] 1/120*(24*A*b^5*d^5*g*i^3*x^5 + 6*(10*B*a^2*b^3*c^3*d^2 - 10*B*a^3*b^2*c^2*
d^3 + 5*B*a^4*b*c*d^4 - B*a^5*d^5)*g*i^3*n*log(b*x + a) + 6*(B*b^5*c^5 - 5*
B*a*b^4*c^4*d)*g*i^3*n*log(d*x + c) - 6*((B*b^5*c*d^4 - B*a*b^4*d^5)*g*i^3*
```

```
n - 5*(3*A*b^5*c*d^4 + A*a*b^4*d^5)*g*i^3)*x^4 - 2*((11*B*b^5*c^2*d^3 - 10*
B*a*b^4*c*d^4 - B*a^2*b^3*d^5)*g*i^3*n - 60*(A*b^5*c^2*d^3 + A*a*b^4*c*d^4)
*g*i^3)*x^3 - 3*((9*B*b^5*c^3*d^2 - 5*B*a*b^4*c^2*d^3 - 5*B*a^2*b^3*c*d^4 +
 B*a^3*b^2*d^5)*g*i^3*n - 20*(A*b^5*c^3*d^2 + 3*A*a*b^4*c^2*d^3)*g*i^3)*x^2
 + 6*(20*A*a*b^4*c^3*d^2*g*i^3 - (B*b^5*c^4*d + 5*B*a*b^4*c^3*d^2 - 10*B*a^
2*b^3*c^2*d^3 + 5*B*a^3*b^2*c*d^4 - B*a^4*b*d^5)*g*i^3*n)*x + 6*(4*B*b^5*d^
5*g*i^3*x^5 + 20*B*a*b^4*c^3*d^2*g*i^3*x + 5*(3*B*b^5*c*d^4 + B*a*b^4*d^5)*
g*i^3*x^4 + 20*(B*b^5*c^2*d^3 + B*a*b^4*c*d^4)*g*i^3*x^3 + 10*(B*b^5*c^3*d^
2 + 3*B*a*b^4*c^2*d^3)*g*i^3*x^2)*log(e) + 6*(4*B*b^5*d^5*g*i^3*n*x^5 + 20*
B*a*b^4*c^3*d^2*g*i^3*n*x + 5*(3*B*b^5*c*d^4 + B*a*b^4*d^5)*g*i^3*n*x^4 + 2
0*(B*b^5*c^2*d^3 + B*a*b^4*c*d^4)*g*i^3*n*x^3 + 10*(B*b^5*c^3*d^2 + 3*B*a*b
^4*c^2*d^3)*g*i^3*n*x^2)*log((b*x + a)/(d*x + c)))/(b^4*d^2)
```

giac [B] time = 5.67, size = 2374, normalized size = 8.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="giac")
```

```
[Out] 1/120*(6*(B*b^7*c^6*g*i*n - 6*B*a*b^6*c^5*d*g*i*n - 5*(b*x + a)*B*b^6*c^6*d
*g*i*n/(d*x + c) + 15*B*a^2*b^5*c^4*d^2*g*i*n + 30*(b*x + a)*B*a*b^5*c^5*d^
2*g*i*n/(d*x + c) - 20*B*a^3*b^4*c^3*d^3*g*i*n - 75*(b*x + a)*B*a^2*b^4*c^4
*d^3*g*i*n/(d*x + c) + 15*B*a^4*b^3*c^2*d^4*g*i*n + 100*(b*x + a)*B*a^3*b^3
*c^3*d^4*g*i*n/(d*x + c) - 6*B*a^5*b^2*c*d^5*g*i*n - 75*(b*x + a)*B*a^4*b^2
*c^2*d^5*g*i*n/(d*x + c) + B*a^6*b*d^6*g*i*n + 30*(b*x + a)*B*a^5*b*c*d^6*g
*i*n/(d*x + c) - 5*(b*x + a)*B*a^6*d^7*g*i*n/(d*x + c))*log((b*x + a)/(d*x
+ c))/(b^5*d^2 - 5*(b*x + a)*b^4*d^3/(d*x + c) + 10*(b*x + a)^2*b^3*d^4/(d*
x + c)^2 - 10*(b*x + a)^3*b^2*d^5/(d*x + c)^3 + 5*(b*x + a)^4*b*d^6/(d*x +
c)^4 - (b*x + a)^5*d^7/(d*x + c)^5) - (5*B*b^10*c^6*g*i*n - 30*B*a*b^9*c^5*
d*g*i*n - 31*(b*x + a)*B*b^9*c^6*d*g*i*n/(d*x + c) + 75*B*a^2*b^8*c^4*d^2*g
*i*n + 186*(b*x + a)*B*a*b^8*c^5*d^2*g*i*n/(d*x + c) + 47*(b*x + a)^2*B*b^8
*c^6*d^2*g*i*n/(d*x + c)^2 - 100*B*a^3*b^7*c^3*d^3*g*i*n - 465*(b*x + a)*B*
a^2*b^7*c^4*d^3*g*i*n/(d*x + c) - 282*(b*x + a)^2*B*a*b^7*c^5*d^3*g*i*n/(d*
x + c)^2 - 27*(b*x + a)^3*B*b^7*c^6*d^3*g*i*n/(d*x + c)^3 + 75*B*a^4*b^6*c^
2*d^4*g*i*n + 620*(b*x + a)*B*a^3*b^6*c^3*d^4*g*i*n/(d*x + c) + 705*(b*x +
a)^2*B*a^2*b^6*c^4*d^4*g*i*n/(d*x + c)^2 + 162*(b*x + a)^3*B*a*b^6*c^5*d^4*
g*i*n/(d*x + c)^3 + 6*(b*x + a)^4*B*b^6*c^6*d^4*g*i*n/(d*x + c)^4 - 30*B*a^
5*b^5*c*d^5*g*i*n - 465*(b*x + a)*B*a^4*b^5*c^2*d^5*g*i*n/(d*x + c) - 940*(
b*x + a)^2*B*a^3*b^5*c^3*d^5*g*i*n/(d*x + c)^2 - 405*(b*x + a)^3*B*a^2*b^5*
c^4*d^5*g*i*n/(d*x + c)^3 - 36*(b*x + a)^4*B*a*b^5*c^5*d^5*g*i*n/(d*x + c)^
4 + 5*B*a^6*b^4*d^6*g*i*n + 186*(b*x + a)*B*a^5*b^4*c*d^6*g*i*n/(d*x + c) +
 705*(b*x + a)^2*B*a^4*b^4*c^2*d^6*g*i*n/(d*x + c)^2 + 540*(b*x + a)^3*B*a^
3*b^4*c^3*d^6*g*i*n/(d*x + c)^3 + 90*(b*x + a)^4*B*a^2*b^4*c^4*d^6*g*i*n/(d
*x + c)^4 - 31*(b*x + a)*B*a^6*b^3*d^7*g*i*n/(d*x + c) - 282*(b*x + a)^2*B*
a^5*b^3*c*d^7*g*i*n/(d*x + c)^2 - 405*(b*x + a)^3*B*a^4*b^3*c^2*d^7*g*i*n/(
d*x + c)^3 - 120*(b*x + a)^4*B*a^3*b^3*c^3*d^7*g*i*n/(d*x + c)^4 + 47*(b*x
+ a)^2*B*a^6*b^2*d^8*g*i*n/(d*x + c)^2 + 162*(b*x + a)^3*B*a^5*b^2*c*d^8*g*
i*n/(d*x + c)^3 + 90*(b*x + a)^4*B*a^4*b^2*c^2*d^8*g*i*n/(d*x + c)^4 - 27*(
b*x + a)^3*B*a^6*b*d^9*g*i*n/(d*x + c)^3 - 36*(b*x + a)^4*B*a^5*b*c*d^9*g*i
*n/(d*x + c)^4 + 6*(b*x + a)^4*B*a^6*d^10*g*i*n/(d*x + c)^4 - 6*A*b^10*c^6*
g*i - 6*B*b^10*c^6*g*i + 36*A*a*b^9*c^5*d*g*i + 36*B*a*b^9*c^5*d*g*i + 30*(
b*x + a)*A*b^9*c^6*d*g*i/(d*x + c) + 30*(b*x + a)*B*b^9*c^6*d*g*i/(d*x + c)
 - 90*A*a^2*b^8*c^4*d^2*g*i - 90*B*a^2*b^8*c^4*d^2*g*i - 180*(b*x + a)*A*a*
b^8*c^5*d^2*g*i/(d*x + c) - 180*(b*x + a)*B*a*b^8*c^5*d^2*g*i/(d*x + c) + 1
20*A*a^3*b^7*c^3*d^3*g*i + 120*B*a^3*b^7*c^3*d^3*g*i + 450*(b*x + a)*A*a^2*
b^7*c^4*d^3*g*i/(d*x + c) + 450*(b*x + a)*B*a^2*b^7*c^4*d^3*g*i/(d*x + c) -
 90*A*a^4*b^6*c^2*d^4*g*i - 90*B*a^4*b^6*c^2*d^4*g*i - 600*(b*x + a)*A*a^3*
b^6*c^3*d^4*g*i/(d*x + c) - 600*(b*x + a)*B*a^3*b^6*c^3*d^4*g*i/(d*x + c) +
```

```
 36*A*a^5*b^5*c*d^5*g*i + 36*B*a^5*b^5*c*d^5*g*i + 450*(b*x + a)*A*a^4*b^5*
c^2*d^5*g*i/(d*x + c) + 450*(b*x + a)*B*a^4*b^5*c^2*d^5*g*i/(d*x + c) - 6*A
*a^6*b^4*d^6*g*i - 6*B*a^6*b^4*d^6*g*i - 180*(b*x + a)*A*a^5*b^4*c*d^6*g*i/
(d*x + c) - 180*(b*x + a)*B*a^5*b^4*c*d^6*g*i/(d*x + c) + 30*(b*x + a)*A*a^
6*b^3*d^7*g*i/(d*x + c) + 30*(b*x + a)*B*a^6*b^3*d^7*g*i/(d*x + c))/(b^8*d^
2 - 5*(b*x + a)*b^7*d^3/(d*x + c) + 10*(b*x + a)^2*b^6*d^4/(d*x + c)^2 - 10
*(b*x + a)^3*b^5*d^5/(d*x + c)^3 + 5*(b*x + a)^4*b^4*d^6/(d*x + c)^4 - (b*x
 + a)^5*b^3*d^7/(d*x + c)^5) + 6*(B*b^6*c^6*g*i*n - 6*B*a*b^5*c^5*d*g*i*n +
 15*B*a^2*b^4*c^4*d^2*g*i*n - 20*B*a^3*b^3*c^3*d^3*g*i*n + 15*B*a^4*b^2*c^2
*d^4*g*i*n - 6*B*a^5*b*c*d^5*g*i*n + B*a^6*d^6*g*i*n)*log(b - (b*x + a)*d/(
d*x + c))/(b^4*d^2) - 6*(B*b^6*c^6*g*i*n - 6*B*a*b^5*c^5*d*g*i*n + 15*B*a^2
*b^4*c^4*d^2*g*i*n - 20*B*a^3*b^3*c^3*d^3*g*i*n + 15*B*a^4*b^2*c^2*d^4*g*i*
n - 6*B*a^5*b*c*d^5*g*i*n + B*a^6*d^6*g*i*n)*log((b*x + a)/(d*x + c))/(b^4*
d^2))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \left(bgx + ag\right)\left(dix + ci\right)^{3}\left(B\ln\left(e\left(\frac{bx + a}{dx + c}\right)^{n}\right) + A\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [B] time = 1.40, size = 1118, normalized size = 3.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, alg
orithm="maxima")
```

```
[Out] 1/5*B*b*d^3*g*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/5*A*b*d^3*
g*i^3*x^5 + 3/4*B*b*c*d^2*g*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)
+ 1/4*B*a*d^3*g*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/4*A*b*c*
d^2*g*i^3*x^4 + 1/4*A*a*d^3*g*i^3*x^4 + B*b*c^2*d*g*i^3*x^3*log(e*(b*x/(d*x
 + c) + a/(d*x + c))^n) + B*a*c*d^2*g*i^3*x^3*log(e*(b*x/(d*x + c) + a/(d*x
 + c))^n) + A*b*c^2*d*g*i^3*x^3 + A*a*c*d^2*g*i^3*x^3 + 1/2*B*b*c^3*g*i^3*x
^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*B*a*c^2*d*g*i^3*x^2*log(e*(
b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*A*b*c^3*g*i^3*x^2 + 3/2*A*a*c^2*d*g*i
^3*x^2 + 1/60*B*b*d^3*g*i^3*n*(12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c
)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3
+ 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) - 1/
8*B*b*c*d^2*g*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(
b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a
^3*d^3)*x)/(b^3*d^3)) - 1/24*B*a*d^3*g*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^
4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*
d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/2*B*b*c^2*d*g*i^3*n*(2*a
^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2
*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 1/2*B*a*c*d^2*g*i^3*n*(2*a^3*log(b*x +
 a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 -
a^2*d^2)*x)/(b^2*d^2)) - 1/2*B*b*c^3*g*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*lo
g(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 3/2*B*a*c^2*d*g*i^3*n*(a^2*log(b*x
+ a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + B*a*c^3*g*i^3*n*(a
*log(b*x + a)/b - c*log(d*x + c)/d) + B*a*c^3*g*i^3*x*log(e*(b*x/(d*x + c)
+ a/(d*x + c))^n) + A*a*c^3*g*i^3*x
```

mupad [B] time = 5.40, size = 1234, normalized size = 4.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)
```

```
[Out] x*((a*c*(((20*a*d + 20*b*c)*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*
b*c*n))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(20*b*d) - (d*g*i^3*(4*A*a
^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2*n - 3*B*b^2*c^2*n + 32*A*a*b*c*d + 2*B*a*
b*c*d*n))/(4*b) + A*a*c*d^2*g*i^3))/(b*d) - ((20*a*d + 20*b*c)*(((20*a*d +
20*b*c)*(((20*a*d + 20*b*c)*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*
b*c*n))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(20*b*d) - (d*g*i^3*(4*A*a
^2*d^2 + 24*A*b^2*c^2 + B*a^2*d^2*n - 3*B*b^2*c^2*n + 32*A*a*b*c*d + 2*B*a*
b*c*d*n))/(4*b) + A*a*c*d^2*g*i^3))/(20*b*d) - (a*c*((d^2*g*i^3*(10*A*a*d +
 20*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(b
*d) + (c*g*i^3*(4*A*a^2*d^2 + 4*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 12*
A*a*b*c*d))/b))/(20*b*d) + (c^2*g*i^3*(12*A*a^2*d^2 + 2*A*b^2*c^2 + 3*B*a^2
*d^2*n - B*b^2*c^2*n + 16*A*a*b*c*d - 2*B*a*b*c*d*n))/(2*b*d)) - x^3*(((20*
a*d + 20*b*c)*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*b*c*n))/5 - (A
*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(60*b*d) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*
b^2*c^2 + B*a^2*d^2*n - 3*B*b^2*c^2*n + 32*A*a*b*c*d + 2*B*a*b*c*d*n))/(12*
b) + (A*a*c*d^2*g*i^3)/3) + x^2*(((20*a*d + 20*b*c)*(((20*a*d + 20*b*c)*((d
^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*b*c*n))/5 - (A*d^2*g*i^3*(20*a*
d + 20*b*c))/20))/(20*b*d) - (d*g*i^3*(4*A*a^2*d^2 + 24*A*b^2*c^2 + B*a^2*d
^2*n - 3*B*b^2*c^2*n + 32*A*a*b*c*d + 2*B*a*b*c*d*n))/(4*b) + A*a*c*d^2*g*i
^3))/(40*b*d) - (a*c*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*b*c*n))
/5 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/20))/(2*b*d) + (c*g*i^3*(4*A*a^2*d^2 +
 4*A*b^2*c^2 + B*a^2*d^2*n - B*b^2*c^2*n + 12*A*a*b*c*d))/(2*b)) + log(e*((
a + b*x)/(c + d*x))^n)*((B*c^2*g*i^3*x^2*(3*a*d + b*c))/2 + (B*d^2*g*i^3*x^
4*(a*d + 3*b*c))/4 + B*a*c^3*g*i^3*x + (B*b*d^3*g*i^3*x^5)/5 + B*c*d*g*i^3*
x^3*(a*d + b*c)) + x^4*((d^2*g*i^3*(10*A*a*d + 20*A*b*c + B*a*d*n - B*b*c*n
))/20 - (A*d^2*g*i^3*(20*a*d + 20*b*c))/80) + (log(c + d*x)*(B*b*c^5*g*i^3*
n - 5*B*a*c^4*d*g*i^3*n))/(20*d^2) - (log(a + b*x)*(B*a^5*d^3*g*i^3*n - 10*
B*a^2*b^3*c^3*g*i^3*n - 5*B*a^4*b*c*d^2*g*i^3*n + 10*B*a^3*b^2*c^2*d*g*i^3*
n))/(20*b^4) + (A*b*d^3*g*i^3*x^5)/5
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Timed out
```

3.130 $\int (ci+dix)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx$

Optimal. Leaf size=156

$$\frac{i^3(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4d}-\frac{Bi^3n(bc-ad)^4\log(a+bx)}{4b^4d}-\frac{Bi^3nx(bc-ad)^3}{4b^3}-\frac{Bi^3n(c+dx)^2(bc-ad)^2}{8b^2d}-\frac{B}{}$$

```
[Out] -1/4*B*(-a*d+b*c)^3*i^3*n*x/b^3-1/8*B*(-a*d+b*c)^2*i^3*n*(d*x+c)^2/b^2/d-1/
12*B*(-a*d+b*c)*i^3*n*(d*x+c)^3/b/d-1/4*B*(-a*d+b*c)^4*i^3*n*ln(b*x+a)/b^4/
d+1/4*i^3*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d
```

Rubi [A] time = 0.09, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2525, 12, 43}

$$\frac{i^3(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4d}-\frac{Bi^3nx(bc-ad)^3}{4b^3}-\frac{Bi^3n(c+dx)^2(bc-ad)^2}{8b^2d}-\frac{Bi^3n(bc-ad)^4\log(a+bx)}{4b^4d}-\frac{B}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] -(B*(b*c - a*d)^3*i^3*n*x)/(4*b^3) - (B*(b*c - a*d)^2*i^3*n*(c + d*x)^2)/(8
*b^2*d) - (B*(b*c - a*d)*i^3*n*(c + d*x)^3)/(12*b*d) - (B*(b*c - a*d)^4*i^3
*n*Log[a + b*x])/(4*b^4*d) + (i^3*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c +
d*x))^n]))/(4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\int (130c+130dx)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right) dx = \frac{549250(c+dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{d} - \frac{(Bn)\int \frac{285610000(b}{a+}}{520d}$$
$$= \frac{549250(c+dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{d} - \frac{(549250B(bc-a}{d}$$
$$= \frac{549250(c+dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{d} - \frac{(549250B(bc-a}{}$$
$$= -\frac{549250B(bc-ad)^3nx}{b^3} - \frac{274625B(bc-ad)^2n(c+dx)^2}{b^2d} - 54$$

Mathematica [A] time = 0.07, size = 124, normalized size = 0.79

$$\frac{i^3\left((c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-\frac{Bn(bc-ad)\left(3b^2(c+dx)^2(bc-ad)+6bdx(bc-ad)^2+6(bc-ad)^3\log(a+bx)+2b^3(c+dx)^3\right)}{6b^4}\right)}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] (i^3*(-1/6*(B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c +
 d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]))/b^4 + (c + d*x
)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])))/(4*d)
```

fricas [B] time = 0.65, size = 429, normalized size = 2.75

$$\frac{6\,Ab^4d^4i^3x^4 - 6\,Bb^4c^4i^3n\log(dx+c) + 6\left(4\,Bab^3c^3d - 6\,Ba^2b^2c^2d^2 + 4\,Ba^3bcd^3 - Ba^4d^4\right)i^3n\log(bx+a) + 2\left(12\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="fric
as")
```

```
[Out] 1/24*(6*A*b^4*d^4*i^3*x^4 - 6*B*b^4*c^4*i^3*n*log(d*x + c) + 6*(4*B*a*b^3*c
^3*d - 6*B*a^2*b^2*c^2*d^2 + 4*B*a^3*b*c*d^3 - B*a^4*d^4)*i^3*n*log(b*x + a
) + 2*(12*A*b^4*c*d^3*i^3 - (B*b^4*c*d^3 - B*a*b^3*d^4)*i^3*n)*x^3 + 3*(12*
A*b^4*c^2*d^2*i^3 - (3*B*b^4*c^2*d^2 - 4*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*i^3
*n)*x^2 + 6*(4*A*b^4*c^3*d*i^3 - (3*B*b^4*c^3*d - 6*B*a*b^3*c^2*d^2 + 4*B*a
^2*b^2*c*d^3 - B*a^3*b*d^4)*i^3*n)*x + 6*(B*b^4*d^4*i^3*x^4 + 4*B*b^4*c*d^3
*i^3*x^3 + 6*B*b^4*c^2*d^2*i^3*x^2 + 4*B*b^4*c^3*d*i^3*x)*log(e) + 6*(B*b^4
*d^4*i^3*n*x^4 + 4*B*b^4*c*d^3*i^3*n*x^3 + 6*B*b^4*c^2*d^2*i^3*n*x^2 + 4*B*
b^4*c^3*d*i^3*n*x)*log((b*x + a)/(d*x + c)))/(b^4*d)
```

giac [B] time = 2.45, size = 1282, normalized size = 8.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="giac
")
```

```
[Out] -1/24*(6*(B*b^5*c^5*i*n - 5*B*a*b^4*c^4*d*i*n + 10*B*a^2*b^3*c^3*d^2*i*n -
10*B*a^3*b^2*c^2*d^3*i*n + 5*B*a^4*b*c*d^4*i*n - B*a^5*d^5*i*n)*log((b*x +
```

```
a)/(d*x + c))/(b^4*d - 4*(b*x + a)*b^3*d^2/(d*x + c) + 6*(b*x + a)^2*b^2*d^
3/(d*x + c)^2 - 4*(b*x + a)^3*b*d^4/(d*x + c)^3 + (b*x + a)^4*d^5/(d*x + c)
^4) - (11*B*b^8*c^5*i*n - 55*B*a*b^7*c^4*d*i*n - 26*(b*x + a)*B*b^7*c^5*d*i
*n/(d*x + c) + 110*B*a^2*b^6*c^3*d^2*i*n + 130*(b*x + a)*B*a*b^6*c^4*d^2*i*
n/(d*x + c) + 21*(b*x + a)^2*B*b^6*c^5*d^2*i*n/(d*x + c)^2 - 110*B*a^3*b^5*
c^2*d^3*i*n - 260*(b*x + a)*B*a^2*b^5*c^3*d^3*i*n/(d*x + c) - 105*(b*x + a)
^2*B*a*b^5*c^4*d^3*i*n/(d*x + c)^2 - 6*(b*x + a)^3*B*b^5*c^5*d^3*i*n/(d*x +
 c)^3 + 55*B*a^4*b^4*c*d^4*i*n + 260*(b*x + a)*B*a^3*b^4*c^2*d^4*i*n/(d*x +
 c) + 210*(b*x + a)^2*B*a^2*b^4*c^3*d^4*i*n/(d*x + c)^2 + 30*(b*x + a)^3*B*
a*b^4*c^4*d^4*i*n/(d*x + c)^3 - 11*B*a^5*b^3*d^5*i*n - 130*(b*x + a)*B*a^4*
b^3*c*d^5*i*n/(d*x + c) - 210*(b*x + a)^2*B*a^3*b^3*c^2*d^5*i*n/(d*x + c)^2
 - 60*(b*x + a)^3*B*a^2*b^3*c^3*d^5*i*n/(d*x + c)^3 + 26*(b*x + a)*B*a^5*b^
2*d^6*i*n/(d*x + c) + 105*(b*x + a)^2*B*a^4*b^2*c*d^6*i*n/(d*x + c)^2 + 60*
(b*x + a)^3*B*a^3*b^2*c^2*d^6*i*n/(d*x + c)^3 - 21*(b*x + a)^2*B*a^5*b*d^7*
i*n/(d*x + c)^2 - 30*(b*x + a)^3*B*a^4*b*c*d^7*i*n/(d*x + c)^3 + 6*(b*x + a
)^3*B*a^5*d^8*i*n/(d*x + c)^3 - 6*A*b^8*c^5*i - 6*B*b^8*c^5*i + 30*A*a*b^7*
c^4*d*i + 30*B*a*b^7*c^4*d*i - 60*A*a^2*b^6*c^3*d^2*i - 60*B*a^2*b^6*c^3*d^
2*i + 60*A*a^3*b^5*c^2*d^3*i + 60*B*a^3*b^5*c^2*d^3*i - 30*A*a^4*b^4*c*d^4*
i - 30*B*a^4*b^4*c*d^4*i + 6*A*a^5*b^3*d^5*i + 6*B*a^5*b^3*d^5*i)/(b^7*d -
4*(b*x + a)*b^6*d^2/(d*x + c) + 6*(b*x + a)^2*b^5*d^3/(d*x + c)^2 - 4*(b*x
+ a)^3*b^4*d^4/(d*x + c)^3 + (b*x + a)^4*b^3*d^5/(d*x + c)^4) + 6*(B*b^5*c^
5*i*n - 5*B*a*b^4*c^4*d*i*n + 10*B*a^2*b^3*c^3*d^2*i*n - 10*B*a^3*b^2*c^2*d
^3*i*n + 5*B*a^4*b*c*d^4*i*n - B*a^5*d^5*i*n)*log(-b + (b*x + a)*d/(d*x + c
))/(b^4*d) - 6*(B*b^5*c^5*i*n - 5*B*a*b^4*c^4*d*i*n + 10*B*a^2*b^3*c^3*d^2*
i*n - 10*B*a^3*b^2*c^2*d^3*i*n + 5*B*a^4*b*c*d^4*i*n - B*a^5*d^5*i*n)*log((
b*x + a)/(d*x + c))/(b^4*d))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.29, size = 0, normalized size = 0.00

$$\int (dix+ci)^3 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [B] time = 1.19, size = 479, normalized size = 3.07

$$\frac{1}{4}Bd^3i^3x^4\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^n\right)+\frac{1}{4}Ad^3i^3x^4+Bcd^2i^3x^3\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^n\right)+Acd^2i^3x^3+\frac{3}{2}Bc^2di^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n)),x, algorithm="maxi
ma")
```

```
[Out] 1/4*B*d^3*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A*d^3*i^3*x^
4 + B*c*d^2*i^3*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*c*d^2*i^3*x^
3 + 3/2*B*c^2*d*i^3*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*A*c^2*
d*i^3*x^2 - 1/24*B*d^3*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d
^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^
3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/2*B*c*d^2*i^3*n*(2*a^3*log(b*x + a)/b^3
- 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)
*x)/(b^2*d^2)) - 3/2*B*c^2*d*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)
/d^2 + (b*c - a*d)*x/(b*d)) + B*c^3*i^3*n*(a*log(b*x + a)/b - c*log(d*x + c
)/d) + B*c^3*i^3*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*c^3*i^3*x
```

mupad [B] time = 4.98, size = 588, normalized size = 3.77

$$x^3\left(\frac{d^2 i^3 (4 A a d + 16 A b c + B a d n - B b c n)}{12 b} - \frac{A d^2 i^3 (4 a d + 4 b c)}{12 b}\right) - x^2\left(\frac{\left(\frac{d^2 i^3 (4 A a d + 16 A b c + B a d n - B b c n)}{4 b} - \frac{A\cdots}{\cdots}\right.}{8 b d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)),x)
```

```
[Out] x^3*((d^2*i^3*(4*A*a*d + 16*A*b*c + B*a*d*n - B*b*c*n))/(12*b) - (A*d^2*i^3
*(4*a*d + 4*b*c))/(12*b)) - x^2*((((d^2*i^3*(4*A*a*d + 16*A*b*c + B*a*d*n -
 B*b*c*n))/(4*b) - (A*d^2*i^3*(4*a*d + 4*b*c))/(4*b))*(4*a*d + 4*b*c))/(8*b
*d) - (c*d*i^3*(4*A*a*d + 6*A*b*c + B*a*d*n - B*b*c*n))/(2*b) + (A*a*c*d^2*
i^3)/(2*b)) + log(e*((a + b*x)/(c + d*x))^n)*((B*d^3*i^3*x^4)/4 + B*c^3*i^3
*x + (3*B*c^2*d*i^3*x^2)/2 + B*c*d^2*i^3*x^3) + x*(((4*a*d + 4*b*c)*((((d^2
*i^3*(4*A*a*d + 16*A*b*c + B*a*d*n - B*b*c*n))/(4*b) - (A*d^2*i^3*(4*a*d +
4*b*c))/(4*b))*(4*a*d + 4*b*c))/(4*b*d) - (c*d*i^3*(4*A*a*d + 6*A*b*c + B*a
*d*n - B*b*c*n))/b + (A*a*c*d^2*i^3)/b))/(4*b*d) + (c^2*i^3*(12*A*a*d + 8*A
*b*c + 3*B*a*d*n - 3*B*b*c*n))/(2*b) - (a*c*((d^2*i^3*(4*A*a*d + 16*A*b*c +
 B*a*d*n - B*b*c*n))/(4*b) - (A*d^2*i^3*(4*a*d + 4*b*c))/(4*b)))/(b*d)) - (
log(a + b*x)*(B*a^4*d^3*i^3*n - 4*B*a*b^3*c^3*i^3*n - 4*B*a^3*b*c*d^2*i^3*n
 + 6*B*a^2*b^2*c^2*d*i^3*n))/(4*b^4) + (A*d^3*i^3*x^4)/4 - (B*c^4*i^3*n*log
(c + d*x))/(4*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n)),x)
```

```
[Out] Timed out
```

3.131 $\int \frac{(ci+dix)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ag+bgx}\,dx$

Optimal. Leaf size=373

$$\frac{di^3(a+bx)(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g}-\frac{i^3(bc-ad)^3\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g}+\frac{i^3(c+d\ldots}{\ldots}$$

```
[Out] -5/6*B*d*(-a*d+b*c)^2*i^3*n*x/b^3/g-1/6*B*(-a*d+b*c)*i^3*n*(d*x+c)^2/b^2/g+
d*(-a*d+b*c)^2*i^3*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^4/g+1/2*(-a*d+
b*c)*i^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/g+1/3*i^3*(d*x+c)^3*
(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b/g-5/6*B*(-a*d+b*c)^3*i^3*n*ln((b*x+a)/(d*
x+c))/b^4/g-11/6*B*(-a*d+b*c)^3*i^3*n*ln(d*x+c)/b^4/g-(-a*d+b*c)^3*i^3*(A+B
*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g+B*(-a*d+b*c)^3*
i^3*n*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g
```

Rubi [A] time = 0.60, antiderivative size = 455, normalized size of antiderivative = 1.22, number of steps used = 22, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.302, Rules used = {2528, 2486, 31, 2524, 2418, 2390, 12, 2301, 2394, 2393, 2391, 2525, 43}

$$\frac{Bi^3n(bc-ad)^3\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^4g}+\frac{i^3(c+dx)^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^2g}+\frac{i^3(bc-ad)^3\log(ag+bgx\ldots}{b^4\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x),
x]
```

```
[Out] (A*d*(b*c - a*d)^2*i^3*x)/(b^3*g) - (5*B*d*(b*c - a*d)^2*i^3*n*x)/(6*b^3*g)
 - (B*(b*c - a*d)*i^3*n*(c + d*x)^2)/(6*b^2*g) - (5*B*(b*c - a*d)^3*i^3*n*L
og[a + b*x])/(6*b^4*g) - (B*(b*c - a*d)^3*i^3*n*Log[g*(a + b*x)]^2)/(2*b^4*
g) + (B*d*(b*c - a*d)^2*i^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(b^4*
g) + ((b*c - a*d)*i^3*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(
2*b^2*g) + (i^3*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b*g)
 - (B*(b*c - a*d)^3*i^3*n*Log[c + d*x])/(b^4*g) + ((b*c - a*d)^3*i^3*(A + B
*Log[e*((a + b*x)/(c + d*x))^n])*Log[a*g + b*g*x])/(b^4*g) + (B*(b*c - a*d)
^3*i^3*n*Log[(b*(c + d*x))/(b*c - a*d)]*Log[a*g + b*g*x])/(b^4*g) + (B*(b*c
 - a*d)^3*i^3*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(131c+131dx)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ag+bgx}\,dx = \int \left(\frac{2248091d(bc-ad)^2 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^3g} + \frac{17161d(b\right.$$

$$= \frac{\left(2248091(bc-ad)^3\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{ag+bgx}\,dx}{b^3} + \frac{(131d)\int(131c+$$

$$= \frac{2248091Ad(bc-ad)^2x}{b^3g} + \frac{2248091(bc-ad)(c+dx)^2\left(A+B\right.}{2b^2g}$$

$$= \frac{2248091Ad(bc-ad)^2x}{b^3g} + \frac{2248091Bd(bc-ad)^2(a+bx)\log\left(\right.}{b^4g}$$

$$= \frac{2248091Ad(bc-ad)^2x}{b^3g} + \frac{2248091Bd(bc-ad)^2(a+bx)\log\left(\right.}{b^4g}$$

$$= \frac{2248091Ad(bc-ad)^2x}{b^3g} - \frac{11240455Bd(bc-ad)^2nx}{6b^3g} - \frac{22480}{}$$

$$= \frac{2248091Ad(bc-ad)^2x}{b^3g} - \frac{11240455Bd(bc-ad)^2nx}{6b^3g} - \frac{22480}{}$$

$$= \frac{2248091Ad(bc-ad)^2x}{b^3g} - \frac{11240455Bd(bc-ad)^2nx}{6b^3g} - \frac{22480}{}$$

Mathematica [A] time = 0.28, size = 368, normalized size = 0.99

$$\frac{i^3\left(2b^3(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+3b^2(c+dx)^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+6(bc-ad)^3\log(g(a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b
*g*x),x]
```

```
[Out] (i^3*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*n*(b*d*x + (b*c - a*d)*Lo
g[a + b*x]) - B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b
*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b*x)/
(c + d*x))^n] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c +
```

```
d*x))^n]) + 2*b^3*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*(b
*c - a*d)^3*Log[g*(a + b*x)]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*B*(
b*c - a*d)^3*n*Log[c + d*x] - 3*B*(b*c - a*d)^3*n*(Log[g*(a + b*x)]*(Log[g*
(a + b*x)] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))
/(-(b*c) + a*d)])))/(6*b^4*g)
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^3i^3x^3 + 3\,Acd^2i^3x^2 + 3\,Ac^2di^3x + Ac^3i^3 + \left(Bd^3i^3x^3 + 3\,Bcd^2i^3x^2 + 3\,Bc^2di^3x + Bc^3i^3\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{bgx + ag}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g),x, alg
orithm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 +
 (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log(e*((
b*x + a)/(d*x + c))^n))/(b*g*x + a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g),x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)}{bgx + ag}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g),x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g),x)
```

maxima [B] time = 4.61, size = 935, normalized size = 2.51

$$3\,Ac^2di^3\left(\frac{x}{bg} - \frac{a\log\left(bx+a\right)}{b^2g}\right) - \frac{1}{6}\,Ad^3i^3\left(\frac{6\,a^3\log\left(bx+a\right)}{b^4g} - \frac{2\,b^2x^3 - 3\,abx^2 + 6\,a^2x}{b^3g}\right) + \frac{3}{2}\,Acd^2i^3\left(\frac{2\,a^2\log\left(bx+a\right)}{b^3g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g),x, alg
orithm="maxima")
```

```
[Out] 3*A*c^2*d*i^3*(x/(b*g) - a*log(b*x + a)/(b^2*g)) - 1/6*A*d^3*i^3*(6*a^3*log
(b*x + a)/(b^4*g) - (2*b^2*x^3 - 3*a*b*x^2 + 6*a^2*x)/(b^3*g)) + 3/2*A*c*d^
2*i^3*(2*a^2*log(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A*c^3*i^3*lo
g(b*g*x + a*g)/(b*g) - 1/6*(11*b^2*c^3*i^3*n - 15*a*b*c^2*d*i^3*n + 6*a^2*c
*d^2*i^3*n)*B*log(d*x + c)/(b^3*g) + (b^3*c^3*i^3*n - 3*a*b^2*c^2*d*i^3*n +
 3*a^2*b*c*d^2*i^3*n - a^3*d^3*i^3*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c
- a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^4*g) + 1/6*(2*B*b^3*d
```

```
^3*i^3*x^3*log(e) - ((i^3*n - 9*i^3*log(e))*b^3*c*d^2 - (i^3*n - 3*i^3*log(
e))*a*b^2*d^3)*B*x^2 - 3*(b^3*c^3*i^3*n - 3*a*b^2*c^2*d*i^3*n + 3*a^2*b*c*d
^2*i^3*n - a^3*d^3*i^3*n)*B*log(b*x + a)^2 - ((7*i^3*n - 18*i^3*log(e))*b^3
*c^2*d - 6*(2*i^3*n - 3*i^3*log(e))*a*b^2*c*d^2 + (5*i^3*n - 6*i^3*log(e))*
a^2*b*d^3)*B*x + (6*b^3*c^3*i^3*log(e) + 18*(i^3*n - i^3*log(e))*a*b^2*c^2*
d - 9*(3*i^3*n - 2*i^3*log(e))*a^2*b*c*d^2 + (11*i^3*n - 6*i^3*log(e))*a^3*
d^3)*B*log(b*x + a) + (2*B*b^3*d^3*i^3*x^3 + 3*(3*b^3*c*d^2*i^3 - a*b^2*d^3
*i^3)*B*x^2 + 6*(3*b^3*c^2*d*i^3 - 3*a*b^2*c*d^2*i^3 + a^2*b*d^3*i^3)*B*x +
 6*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3 - a^3*d^3*i^3)*B*lo
g(b*x + a))*log((b*x + a)^n) - (2*B*b^3*d^3*i^3*x^3 + 3*(3*b^3*c*d^2*i^3 -
a*b^2*d^3*i^3)*B*x^2 + 6*(3*b^3*c^2*d*i^3 - 3*a*b^2*c*d^2*i^3 + a^2*b*d^3*i
^3)*B*x + 6*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3 - a^3*d^3*
i^3)*B*log(b*x + a))*log((d*x + c)^n))/(b^4*g)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{a\,g+b\,g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x),
x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x),
 x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g),x)
```

```
[Out] Timed out
```

3.132 $\int \frac{(ci+dix)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=390

$$\frac{2d^2i^3(a+bx)(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^2}-\frac{3di^3(bc-ad)^2\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^2}-\frac{i^3(c+a}{}$$

```
[Out] -1/2*B*d^2*(-a*d+b*c)*i^3*n*x/b^3/g^2-B*(-a*d+b*c)^2*i^3*n*(d*x+c)/b^3/g^2/
(b*x+a)+2*d^2*(-a*d+b*c)*i^3*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^4/g^
2-(-a*d+b*c)^2*i^3*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^3/g^2/(b*x+a)+
1/2*d*i^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^2-1/2*B*d*(-a*d+b
*c)^2*i^3*n*ln((b*x+a)/(d*x+c))/b^4/g^2-5/2*B*d*(-a*d+b*c)^2*i^3*n*ln(d*x+c
)/b^4/g^2-3*d*(-a*d+b*c)^2*i^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(d*x+
c)/d/(b*x+a))/b^4/g^2+3*B*d*(-a*d+b*c)^2*i^3*n*polylog(2,b*(d*x+c)/d/(b*x+a
))/b^4/g^2
```

Rubi [A] time = 0.69, antiderivative size = 543, normalized size of antiderivative = 1.39, number of steps used = 21, number of rules used = 14, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.326, Rules used = {2528, 2486, 31, 2525, 12, 72, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3Bdi^3n(bc-ad)^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^4g^2}-\frac{a^2Bd^3i^3n\log(a+bx)}{2b^4g^2}+\frac{d^3i^3x^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^2g^2}+\frac{3di^3(bc-ad)^2\text{lo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^
2,x]
```

```
[Out] (A*d^2*(3*b*c - 2*a*d)*i^3*x)/(b^3*g^2) - (B*d^2*(b*c - a*d)*i^3*n*x)/(2*b^
3*g^2) - (B*(b*c - a*d)^3*i^3*n)/(b^4*g^2*(a + b*x)) - (a^2*B*d^3*i^3*n*Log
[a + b*x])/(2*b^4*g^2) - (B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x])/(b^4*g^2) -
 (3*B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]^2)/(2*b^4*g^2) + (B*d^2*(3*b*c - 2
*a*d)*i^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(b^4*g^2) + (d^3*i^3*x^
2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^2*g^2) - ((b*c - a*d)^3*i^3*
(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^2*(a + b*x)) + (3*d*(b*c - a
*d)^2*i^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^2) +
(B*c^2*d*i^3*n*Log[c + d*x])/(2*b^2*g^2) - (B*d*(3*b*c - 2*a*d)*(b*c - a*d)
*i^3*n*Log[c + d*x])/(b^4*g^2) + (B*d*(b*c - a*d)^2*i^3*n*Log[c + d*x])/(b^
4*g^2) + (3*B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a
*d)])/(b^4*g^2) + (3*B*d*(b*c - a*d)^2*i^3*n*PolyLog[2, -((d*(a + b*x))/(b*
c - a*d))])/(b^4*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
```

```
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
```

```
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(132c+132dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^2}\,dx = \int \left(\frac{2299968d^2(3bc-2ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^3g^2}+\frac{2299968\ldots}{\ldots}\right.$$

$$= \frac{\left(2299968d^3\right)\int x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx}{b^2g^2}+\frac{\left(2299968d^2(3b\ldots\right.}{\ldots}$$

$$= \frac{2299968Ad^2(3bc-2ad)x}{b^3g^2}+\frac{1149984d^3x^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{b^2g^2}$$

$$= \frac{2299968Ad^2(3bc-2ad)x}{b^3g^2}+\frac{2299968Bd^2(3bc-2ad)(a+bx)\,\mathrm{lo}\ldots}{b^4g^2}$$

$$= \frac{2299968Ad^2(3bc-2ad)x}{b^3g^2}+\frac{2299968Bd^2(3bc-2ad)(a+bx)\,\mathrm{lo}\ldots}{b^4g^2}$$

$$= \frac{2299968Ad^2(3bc-2ad)x}{b^3g^2}-\frac{1149984Bd^2(bc-ad)nx}{b^3g^2}-\frac{229996\ldots}{b^4\ldots}$$

$$= \frac{2299968Ad^2(3bc-2ad)x}{b^3g^2}-\frac{1149984Bd^2(bc-ad)nx}{b^3g^2}-\frac{229996\ldots}{b^4\ldots}$$

$$= \frac{2299968Ad^2(3bc-2ad)x}{b^3g^2}-\frac{1149984Bd^2(bc-ad)nx}{b^3g^2}-\frac{229996\ldots}{b^4\ldots}$$

Mathematica [A] time = 0.40, size = 394, normalized size = 1.01

$$i^3\left(-a^2Bd^3n\log(a+bx)+b^2d^3x^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+6d(bc-ad)^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b
*g*x)^2,x]
```

```
[Out] (i^3*(2*A*b*d^2*(3*b*c - 2*a*d)*x - b*B*d^2*(b*c - a*d)*n*x - (2*B*(b*c - a
*d)^3*n)/(a + b*x) - a^2*B*d^3*n*Log[a + b*x] - 2*B*d*(b*c - a*d)^2*n*Log[a
 + b*x] + 2*B*d^2*(3*b*c - 2*a*d)*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n]
+ b^2*d^3*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - (2*(b*c - a*d)^3*(A
+ B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) + 6*d*(b*c - a*d)^2*Log[a +
b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + b^2*B*c^2*d*n*Log[c + d*x] +
2*B*d*(b*c - a*d)^2*n*Log[c + d*x] - 2*B*d*(-(b*c) + a*d)*(-3*b*c + 2*a*d)*
n*Log[c + d*x] - 3*B*d*(b*c - a*d)^2*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[
(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))
/(2*b^4*g^2)
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^3i^3x^3+3\,Acd^2i^3x^2+3\,Ac^2di^3x+Ac^3i^3+\left(Bd^3i^3x^3+3\,Bcd^2i^3x^2+3\,Bc^2di^3x+Bc^3i^3\right)\log\left(e\left(\frac{bx+}{dx+}\right.\right.}{b^2g^2x^2+2\,abg^2x+a^2g^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, a
lgorithm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 +
 (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log(e*((
b*x + a)/(d*x + c))^n))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^3\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)}{\left(bgx+ag\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2,x)
```

maxima [B] time = 4.41, size = 1785, normalized size = 4.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2,x, a
lgorithm="maxima")
```

```
[Out] -B*c^3*i^3*n*(1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2
) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2)) - 3*A*(a^2/(b^4*g^2*x + a*b^3*g^2
) - x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g^2))*c*d^2*i^3 + 1/2*(2*a^3/(b^5*g
^2*x + a*b^4*g^2) + 6*a^2*log(b*x + a)/(b^4*g^2) + (b*x^2 - 4*a*x)/(b^3*g^2
))*A*d^3*i^3 + 3*A*c^2*d*i^3*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2
*g^2)) - B*c^3*i^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^2*g^2*x + a*b*
g^2) - A*c^3*i^3/(b^2*g^2*x + a*b*g^2) - 1/2*(5*b^3*c^3*d*i^3*n - 3*a*b^2*c
^2*d^2*i^3*n - 2*a^2*b*c*d^3*i^3*n + 2*a^3*d^4*i^3*n)*B*log(d*x + c)/(b^5*c
*g^2 - a*b^4*d*g^2) + 1/2*((b^4*c*d^3*i^3*log(e) - a*b^3*d^4*i^3*log(e))*B*
x^3 - ((i^3*n - 6*i^3*log(e))*b^4*c^2*d^2 - (2*i^3*n - 9*i^3*log(e))*a*b^3*
c*d^3 + (i^3*n - 3*i^3*log(e))*a^2*b^2*d^4)*B*x^2 - ((i^3*n - 6*i^3*log(e))
*a*b^3*c^2*d^2 - 2*(i^3*n - 5*i^3*log(e))*a^2*b^2*c*d^3 + (i^3*n - 4*i^3*lo
g(e))*a^3*b*d^4)*B*x - 3*((b^4*c^3*d*i^3*n - 3*a*b^3*c^2*d^2*i^3*n + 3*a^2*
b^2*c*d^3*i^3*n - a^3*b*d^4*i^3*n)*B*x + (a*b^3*c^3*d*i^3*n - 3*a^2*b^2*c^2
*d^2*i^3*n + 3*a^3*b*c*d^3*i^3*n - a^4*d^4*i^3*n)*B)*log(b*x + a)^2 + 2*(3*
(i^3*n + i^3*log(e))*a*b^3*c^3*d - 6*(i^3*n + i^3*log(e))*a^2*b^2*c^2*d^2 +
 4*(i^3*n + i^3*log(e))*a^3*b*c*d^3 - (i^3*n + i^3*log(e))*a^4*d^4)*B + ((6
*b^4*c^3*d*i^3*log(e) + 6*(2*i^3*n - 3*i^3*log(e))*a*b^3*c^2*d^2 - (17*i^3*
n - 18*i^3*log(e))*a^2*b^2*c*d^3 + (7*i^3*n - 6*i^3*log(e))*a^3*b*d^4)*B*x
+ (6*a*b^3*c^3*d*i^3*log(e) + 6*(2*i^3*n - 3*i^3*log(e))*a^2*b^2*c^2*d^2 -
(17*i^3*n - 18*i^3*log(e))*a^3*b*c*d^3 + (7*i^3*n - 6*i^3*log(e))*a^4*d^4)*
B)*log(b*x + a) + ((b^4*c*d^3*i^3 - a*b^3*d^4*i^3)*B*x^3 + 3*(2*b^4*c^2*d^2
*i^3 - 3*a*b^3*c*d^3*i^3 + a^2*b^2*d^4*i^3)*B*x^2 + 2*(3*a*b^3*c^2*d^2*i^3
- 5*a^2*b^2*c*d^3*i^3 + 2*a^3*b*d^4*i^3)*B*x + 2*(3*a*b^3*c^3*d*i^3 - 6*a^2
*b^2*c^2*d^2*i^3 + 4*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B + 6*((b^4*c^3*d*i^3 -
 3*a*b^3*c^2*d^2*i^3 + 3*a^2*b^2*c*d^3*i^3 - a^3*b*d^4*i^3)*B*x + (a*b^3*c^
3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 3*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B)*log(b
*x + a))*log((b*x + a)^n) - ((b^4*c*d^3*i^3 - a*b^3*d^4*i^3)*B*x^3 + 3*(2*b
^4*c^2*d^2*i^3 - 3*a*b^3*c*d^3*i^3 + a^2*b^2*d^4*i^3)*B*x^2 + 2*(3*a*b^3*c^
2*d^2*i^3 - 5*a^2*b^2*c*d^3*i^3 + 2*a^3*b*d^4*i^3)*B*x + 2*(3*a*b^3*c^3*d*i
^3 - 6*a^2*b^2*c^2*d^2*i^3 + 4*a^3*b*c*d^3*i^3 - a^4*d^4*i^3)*B + 6*((b^4*c
^3*d*i^3 - 3*a*b^3*c^2*d^2*i^3 + 3*a^2*b^2*c*d^3*i^3 - a^3*b*d^4*i^3)*B*x +
 (a*b^3*c^3*d*i^3 - 3*a^2*b^2*c^2*d^2*i^3 + 3*a^3*b*c*d^3*i^3 - a^4*d^4*i^3
)*B)*log(b*x + a))*log((d*x + c)^n))/(a*b^5*c*g^2 - a^2*b^4*d*g^2 + (b^6*c*
g^2 - a*b^5*d*g^2)*x) + 3*(b^2*c^2*d*i^3*n - 2*a*b*c*d^2*i^3*n + a^2*d^3*i^
3*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d
)/(b*c - a*d)))*B/(b^4*g^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{{\left(a\,g+b\,g\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
2,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
2, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**2,x)
[Out] Timed out
```

3.133 $\int \frac{(ci+dix)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^3}\,dx$

Optimal. Leaf size=361

$$\frac{d^3i^3(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^3}-\frac{3d^2i^3(bc-ad)\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^3}-\frac{2di^3(c+dx)(bc-}{b}$$

```
[Out] -2*B*d*(-a*d+b*c)*i^3*n*(d*x+c)/b^3/g^3/(b*x+a)-1/4*B*(-a*d+b*c)*i^3*n*(d*x
+c)^2/b^2/g^3/(b*x+a)^2+d^3*i^3*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^4
/g^3-2*d*(-a*d+b*c)*i^3*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^3/g^3/(b*
x+a)-1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^3/(
b*x+a)^2-B*d^2*(-a*d+b*c)*i^3*n*ln(d*x+c)/b^4/g^3-3*d^2*(-a*d+b*c)*i^3*(A+B
*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^3+3*B*d^2*(-a*d
+b*c)*i^3*n*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^3
```

Rubi [A] time = 0.71, antiderivative size = 461, normalized size of antiderivative = 1.28, number of steps used = 21, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.302, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3Bd^2i^3n(bc-ad)\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^4g^3}+\frac{3d^2i^3(bc-ad)\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^3}-\frac{3di^3(bc-ad)^2\left(B\log\right.}{b^4g^3(a}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^
3,x]
```

```
[Out] (A*d^3*i^3*x)/(b^3*g^3) - (B*(b*c - a*d)^3*i^3*n)/(4*b^4*g^3*(a + b*x)^2) -
 (5*B*d*(b*c - a*d)^2*i^3*n)/(2*b^4*g^3*(a + b*x)) - (5*B*d^2*(b*c - a*d)*i
^3*n*Log[a + b*x])/(2*b^4*g^3) - (3*B*d^2*(b*c - a*d)*i^3*n*Log[a + b*x]^2)
/(2*b^4*g^3) + (B*d^3*i^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(b^4*g^
3) - ((b*c - a*d)^3*i^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^4*g^3*
(a + b*x)^2) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
))/(b^4*g^3*(a + b*x)) + (3*d^2*(b*c - a*d)*i^3*Log[a + b*x]*(A + B*Log[e*(
(a + b*x)/(c + d*x))^n]))/(b^4*g^3) + (3*B*d^2*(b*c - a*d)*i^3*n*Log[c + d*
x])/(2*b^4*g^3) + (3*B*d^2*(b*c - a*d)*i^3*n*Log[a + b*x]*Log[(b*(c + d*x))
/(b*c - a*d)])/(b^4*g^3) + (3*B*d^2*(b*c - a*d)*i^3*n*PolyLog[2, -((d*(a +
b*x))/(b*c - a*d))])/(b^4*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] && !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(133c+133dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^3}\,dx = \int\left(\frac{2352637d^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^3g^3}+\frac{2352637(bc-ad)^3\left(\right.}{b^3g^3(}\right.$$

$$=\frac{\left(2352637d^3\right)\int\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx}{b^3g^3}+\frac{\left(7057911d^2(bc-\right.}{}$$

$$=\frac{2352637Ad^3x}{b^3g^3}-\frac{2352637(bc-ad)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{2b^4g^3(a+bx)^2}-$$

$$=\frac{2352637Ad^3x}{b^3g^3}+\frac{2352637Bd^3(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^4g^3}-\frac{23526}{}$$

$$=\frac{2352637Ad^3x}{b^3g^3}+\frac{2352637Bd^3(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^4g^3}-\frac{23526}{}$$

$$=\frac{2352637Ad^3x}{b^3g^3}-\frac{2352637B(bc-ad)^3n}{4b^4g^3(a+bx)^2}-\frac{11763185Bd(bc-ad}{2b^4g^3(a+bx)}$$

$$=\frac{2352637Ad^3x}{b^3g^3}-\frac{2352637B(bc-ad)^3n}{4b^4g^3(a+bx)^2}-\frac{11763185Bd(bc-ad}{2b^4g^3(a+bx)}$$

$$=\frac{2352637Ad^3x}{b^3g^3}-\frac{2352637B(bc-ad)^3n}{4b^4g^3(a+bx)^2}-\frac{11763185Bd(bc-ad}{2b^4g^3(a+bx)}$$

Mathematica [A] time = 0.49, size = 331, normalized size = 0.92

$$i^3\left(12d^2(bc-ad)\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-\frac{12d(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{a+bx}-\frac{2(bc-ad)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{(a+bx)^2}+4\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b
*g*x)^3,x]
```

```
[Out] (i^3*(4*A*b*d^3*x - (B*(b*c - a*d)^3*n)/(a + b*x)^2 - (10*B*d*(b*c - a*d)^2
*n)/(a + b*x) + 10*B*d^2*(-(b*c) + a*d)*n*Log[a + b*x] + 4*B*d^3*(a + b*x)*
Log[e*((a + b*x)/(c + d*x))^n] - (2*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(
```

```
c + d*x))^n]))/(a + b*x)^2 - (12*d*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n]))/(a + b*x) + 12*d^2*(b*c - a*d)*Log[a + b*x]*(A + B*Log[e*((a
+ b*x)/(c + d*x))^n]) + 6*B*d^2*(b*c - a*d)*n*Log[c + d*x] + 6*B*d^2*(-(b*c
) + a*d)*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)])
- 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(4*b^4*g^3)
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^3i^3x^3 + 3\,Acd^2i^3x^2 + 3\,Ac^2di^3x + Ac^3i^3 + \left(Bd^3i^3x^3 + 3\,Bcd^2i^3x^2 + 3\,Bc^2di^3x + Bc^3i^3\right)\log\left(e\left(\frac{bx+}{dx+}\right.\right.}{b^3g^3x^3 + 3\,ab^2g^3x^2 + 3\,a^2bg^3x + a^3g^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, a
lgorithm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 +
 (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log(e*((
b*x + a)/(d*x + c))^n))/(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^
3*g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^3\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)}{\left(bgx+ag\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3,x)
```

maxima [B] time = 5.10, size = 2746, normalized size = 7.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3,x, a
lgorithm="maxima")
```

```
[Out] -3/4*B*c^2*d*i^3*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b
^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3
) + 2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)
*g^3) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*
d^2)*g^3)) + 1/4*B*c^3*i^3*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^
3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*
log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)
```

```
/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3)) - 1/2*A*d^3*i^3*((6*a^2*b*x + 5
*a^3)/(b^6*g^3*x^2 + 2*a*b^5*g^3*x + a^2*b^4*g^3) - 2*x/(b^3*g^3) + 6*a*log
(b*x + a)/(b^4*g^3)) + 3/2*A*c*d^2*i^3*((4*a*b*x + 3*a^2)/(b^5*g^3*x^2 + 2*
a*b^4*g^3*x + a^2*b^3*g^3) + 2*log(b*x + a)/(b^3*g^3)) - 3/2*(2*b*x + a)*B*
c^2*d*i^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^3*x^2 + 2*a*b^3*g^3
*x + a^2*b^2*g^3) - 3/2*(2*b*x + a)*A*c^2*d*i^3/(b^4*g^3*x^2 + 2*a*b^3*g^3*
x + a^2*b^2*g^3) - 1/2*B*c^3*i^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^
3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*A*c^3*i^3/(b^3*g^3*x^2 + 2*a*b
^2*g^3*x + a^2*b*g^3) - 1/2*(2*b^3*c^3*d^2*i^3*n + 8*a*b^2*c^2*d^3*i^3*n -
13*a^2*b*c*d^4*i^3*n + 5*a^3*d^5*i^3*n)*B*log(d*x + c)/(b^6*c^2*g^3 - 2*a*b
^5*c*d*g^3 + a^2*b^4*d^2*g^3) + 1/4*(4*(b^5*c^2*d^3*i^3*log(e) - 2*a*b^4*c*
d^4*i^3*log(e) + a^2*b^3*d^5*i^3*log(e))*B*x^3 + 8*(a*b^4*c^2*d^3*i^3*log(e
) - 2*a^2*b^3*c*d^4*i^3*log(e) + a^3*b^2*d^5*i^3*log(e))*B*x^2 + 2*(12*(i^3
*n + i^3*log(e))*a*b^4*c^3*d^2 - (27*i^3*n + 28*i^3*log(e))*a^2*b^3*c^2*d^3
 + 20*(i^3*n + i^3*log(e))*a^3*b^2*c*d^4 - (5*i^3*n + 4*i^3*log(e))*a^4*b*d
^5)*B*x - 6*((b^5*c^3*d^2*i^3*n - 3*a*b^4*c^2*d^3*i^3*n + 3*a^2*b^3*c*d^4*i
^3*n - a^3*b^2*d^5*i^3*n)*B*x^2 + 2*(a*b^4*c^3*d^2*i^3*n - 3*a^2*b^3*c^2*d^
3*i^3*n + 3*a^3*b^2*c*d^4*i^3*n - a^4*b*d^5*i^3*n)*B*x + (a^2*b^3*c^3*d^2*i
^3*n - 3*a^3*b^2*c^2*d^3*i^3*n + 3*a^4*b*c*d^4*i^3*n - a^5*d^5*i^3*n)*B)*lo
g(b*x + a)^2 + (3*(7*i^3*n + 6*i^3*log(e))*a^2*b^3*c^3*d^2 - (47*i^3*n + 46
*i^3*log(e))*a^3*b^2*c^2*d^3 + (35*i^3*n + 38*i^3*log(e))*a^4*b*c*d^4 - (9*
i^3*n + 10*i^3*log(e))*a^5*d^5)*B + 2*((6*b^5*c^3*d^2*i^3*log(e) + 2*(7*i^3
*n - 9*i^3*log(e))*a*b^4*c^2*d^3 - (19*i^3*n - 18*i^3*log(e))*a^2*b^3*c*d^4
 + (7*i^3*n - 6*i^3*log(e))*a^3*b^2*d^5)*B*x^2 + 2*(6*a*b^4*c^3*d^2*i^3*log
(e) + 2*(7*i^3*n - 9*i^3*log(e))*a^2*b^3*c^2*d^3 - (19*i^3*n - 18*i^3*log(e
))*a^3*b^2*c*d^4 + (7*i^3*n - 6*i^3*log(e))*a^4*b*d^5)*B*x + (6*a^2*b^3*c^3
*d^2*i^3*log(e) + 2*(7*i^3*n - 9*i^3*log(e))*a^3*b^2*c^2*d^3 - (19*i^3*n -
18*i^3*log(e))*a^4*b*c*d^4 + (7*i^3*n - 6*i^3*log(e))*a^5*d^5)*B)*log(b*x +
 a) + 2*(2*(b^5*c^2*d^3*i^3 - 2*a*b^4*c*d^4*i^3 + a^2*b^3*d^5*i^3)*B*x^3 +
4*(a*b^4*c^2*d^3*i^3 - 2*a^2*b^3*c*d^4*i^3 + a^3*b^2*d^5*i^3)*B*x^2 + 4*(3*
a*b^4*c^3*d^2*i^3 - 7*a^2*b^3*c^2*d^3*i^3 + 5*a^3*b^2*c*d^4*i^3 - a^4*b*d^5
*i^3)*B*x + (9*a^2*b^3*c^3*d^2*i^3 - 23*a^3*b^2*c^2*d^3*i^3 + 19*a^4*b*c*d^
4*i^3 - 5*a^5*d^5*i^3)*B + 6*((b^5*c^3*d^2*i^3 - 3*a*b^4*c^2*d^3*i^3 + 3*a^
2*b^3*c*d^4*i^3 - a^3*b^2*d^5*i^3)*B*x^2 + 2*(a*b^4*c^3*d^2*i^3 - 3*a^2*b^3
*c^2*d^3*i^3 + 3*a^3*b^2*c*d^4*i^3 - a^4*b*d^5*i^3)*B*x + (a^2*b^3*c^3*d^2*
i^3 - 3*a^3*b^2*c^2*d^3*i^3 + 3*a^4*b*c*d^4*i^3 - a^5*d^5*i^3)*B)*log(b*x +
 a))*log((b*x + a)^n) - 2*(2*(b^5*c^2*d^3*i^3 - 2*a*b^4*c*d^4*i^3 + a^2*b^3
*d^5*i^3)*B*x^3 + 4*(a*b^4*c^2*d^3*i^3 - 2*a^2*b^3*c*d^4*i^3 + a^3*b^2*d^5*
i^3)*B*x^2 + 4*(3*a*b^4*c^3*d^2*i^3 - 7*a^2*b^3*c^2*d^3*i^3 + 5*a^3*b^2*c*d
^4*i^3 - a^4*b*d^5*i^3)*B*x + (9*a^2*b^3*c^3*d^2*i^3 - 23*a^3*b^2*c^2*d^3*i
^3 + 19*a^4*b*c*d^4*i^3 - 5*a^5*d^5*i^3)*B + 6*((b^5*c^3*d^2*i^3 - 3*a*b^4*
c^2*d^3*i^3 + 3*a^2*b^3*c*d^4*i^3 - a^3*b^2*d^5*i^3)*B*x^2 + 2*(a*b^4*c^3*d
^2*i^3 - 3*a^2*b^3*c^2*d^3*i^3 + 3*a^3*b^2*c*d^4*i^3 - a^4*b*d^5*i^3)*B*x +
 (a^2*b^3*c^3*d^2*i^3 - 3*a^3*b^2*c^2*d^3*i^3 + 3*a^4*b*c*d^4*i^3 - a^5*d^5
*i^3)*B)*log(b*x + a))*log((d*x + c)^n))/(a^2*b^6*c^2*g^3 - 2*a^3*b^5*c*d*g
^3 + a^4*b^4*d^2*g^3 + (b^8*c^2*g^3 - 2*a*b^7*c*d*g^3 + a^2*b^6*d^2*g^3)*x^
2 + 2*(a*b^7*c^2*g^3 - 2*a^2*b^6*c*d*g^3 + a^3*b^5*d^2*g^3)*x) + 3*(b*c*d^2
*i^3*n - a*d^3*i^3*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + di
log(-(b*d*x + a*d)/(b*c - a*d)))*B/(b^4*g^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{{\left(a\,g+b\,g\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
3,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
3, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**3,x)
```

```
[Out] Timed out
```

3.134 $\int \frac{(ci+dix)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^4}\,dx$

Optimal. Leaf size=326

$$-\frac{d^3i^3\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^4}-\frac{d^2i^3(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g^4(a+bx)}-\frac{di^3(c+dx)^2\left(B\log\left(e\left(\frac{a+b}{c+d}\right.\right.\right.}{2b^2g^4(a+bx)^2}$$

```
[Out] -B*d^2*i^3*n*(d*x+c)/b^3/g^4/(b*x+a)-1/4*B*d*i^3*n*(d*x+c)^2/b^2/g^4/(b*x+a
)^2-1/9*B*i^3*n*(d*x+c)^3/b/g^4/(b*x+a)^3-d^2*i^3*(d*x+c)*(A+B*ln(e*((b*x+a
)/(d*x+c))^n))/b^3/g^4/(b*x+a)-1/2*d*i^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+
c))^n))/b^2/g^4/(b*x+a)^2-1/3*i^3*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))
/b/g^4/(b*x+a)^3-d^3*i^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(
b*x+a))/b^4/g^4+B*d^3*i^3*n*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^4
```

Rubi [A] time = 0.79, antiderivative size = 444, normalized size of antiderivative = 1.36, number of steps used = 22, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^3i^3n\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^4g^4}+\frac{d^3i^3\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^4}-\frac{3d^2i^3(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^4(a+bx)}-$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b*g*x)^
4,x]
```

```
[Out] -(B*(b*c - a*d)^3*i^3*n)/(9*b^4*g^4*(a + b*x)^3) - (7*B*d*(b*c - a*d)^2*i^3
*n)/(12*b^4*g^4*(a + b*x)^2) - (11*B*d^2*(b*c - a*d)*i^3*n)/(6*b^4*g^4*(a +
 b*x)) - (11*B*d^3*i^3*n*Log[a + b*x])/(6*b^4*g^4) - (B*d^3*i^3*n*Log[a + b
*x]^2)/(2*b^4*g^4) - ((b*c - a*d)^3*i^3*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]))/(3*b^4*g^4*(a + b*x)^3) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[e*((a + b*
x)/(c + d*x))^n]))/(2*b^4*g^4*(a + b*x)^2) - (3*d^2*(b*c - a*d)*i^3*(A + B*
Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^4*(a + b*x)) + (d^3*i^3*Log[a + b*x
]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^4) + (11*B*d^3*i^3*n*Log[c
 + d*x])/(6*b^4*g^4) + (B*d^3*i^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a
*d)])/(b^4*g^4) + (B*d^3*i^3*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b
^4*g^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(134c+134dx)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ag+bgx)^4}\,dx = \int \left(\frac{2406104(bc-ad)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^3g^4(a+bx)^4} + \frac{7218312d(bc\right.$$

$$= \frac{\left(2406104d^3\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}dx}{b^3g^4} + \frac{\left(7218312d^2(bc-ad)\right)\int -\frac{A}{}}{b^3g^4}$$

$$= -\frac{2406104(bc-ad)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3b^4g^4(a+bx)^3} - \frac{3609156d(bc-}{}$$

$$= -\frac{2406104(bc-ad)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3b^4g^4(a+bx)^3} - \frac{3609156d(bc-}{}$$

$$= -\frac{2406104(bc-ad)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3b^4g^4(a+bx)^3} - \frac{3609156d(bc-}{}$$

$$= -\frac{2406104B(bc-ad)^3n}{9b^4g^4(a+bx)^3} - \frac{4210682Bd(bc-ad)^2n}{3b^4g^4(a+bx)^2} - \frac{13233572B}{3b^4g^4}$$

$$= -\frac{2406104B(bc-ad)^3n}{9b^4g^4(a+bx)^3} - \frac{4210682Bd(bc-ad)^2n}{3b^4g^4(a+bx)^2} - \frac{13233572B}{3b^4g^4}$$

$$= -\frac{2406104B(bc-ad)^3n}{9b^4g^4(a+bx)^3} - \frac{4210682Bd(bc-ad)^2n}{3b^4g^4(a+bx)^2} - \frac{13233572B}{3b^4g^4}$$

Mathematica [A] time = 0.46, size = 326, normalized size = 1.00

$$\frac{i^3\left(36d^3\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) + \frac{108d^2(ad-bc)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{a+bx} - \frac{54d(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{(a+bx)^2} - \frac{12(bc-ad}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a*g + b
*g*x)^4,x]
```

```
[Out] (i^3*((-4*B*(b*c - a*d)^3*n)/(a + b*x)^3 - (21*B*d*(b*c - a*d)^2*n)/(a + b*
x)^2 + (66*B*d^2*(-(b*c) + a*d)*n)/(a + b*x) - 66*B*d^3*n*Log[a + b*x] - (1
2*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^3 - (54*d
*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^2 + (108*d
^2*(-(b*c) + a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) + 36*d^
3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 66*B*d^3*n*Log[c +
d*x] - 18*B*d^3*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c -
a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(36*b^4*g^4)
```

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ad^3i^3x^3 + 3\,Acd^2i^3x^2 + 3\,Ac^2di^3x + Ac^3i^3 + \left(Bd^3i^3x^3 + 3\,Bcd^2i^3x^2 + 3\,Bc^2di^3x + Bc^3i^3\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right.}{b^4g^4x^4 + 4\,ab^3g^4x^3 + 6\,a^2b^2g^4x^2 + 4\,a^3bg^4x + a^4g^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, a
lgorithm="fricas")
```

```
[Out] integral((A*d^3*i^3*x^3 + 3*A*c*d^2*i^3*x^2 + 3*A*c^2*d*i^3*x + A*c^3*i^3 +
 (B*d^3*i^3*x^3 + 3*B*c*d^2*i^3*x^2 + 3*B*c^2*d*i^3*x + B*c^3*i^3)*log(e*((
b*x + a)/(d*x + c))^n))/(b^4*g^4*x^4 + 4*a*b^3*g^4*x^3 + 6*a^2*b^2*g^4*x^2
+ 4*a^3*b*g^4*x + a^4*g^4), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^3 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)}{\left(bgx+ag\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4,x, a
lgorithm="maxima")
```

```
[Out] -1/6*B*c*d^2*i^3*n*((11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2 + 6*(3*b^4*c^
2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^2*c*d + 2*a^3
*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*(a*b^7*c^2 -
2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4
*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*g^4) + 6*(3*b
^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(b*x + a)/((b^6*c^3 - 3*a*b^5*c^2*d +
3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^
3)*log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*
g^4)) - 1/18*B*c^3*i^3*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d
^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*
x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2
- 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b
*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2
 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b
^2*c*d^2 - a^3*b*d^3)*g^4)) - 1/12*B*c^2*d*i^3*n*((5*a*b^2*c^2 - 22*a^2*b*c
*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*
d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b
^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*
c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4)
 - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3
```

```
*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 -
 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4)) + 1/6*A*d^3*i^3*((18*
a*b^2*x^2 + 27*a^2*b*x + 11*a^3)/(b^7*g^4*x^3 + 3*a*b^6*g^4*x^2 + 3*a^2*b^5
*g^4*x + a^3*b^4*g^4) + 6*log(b*x + a)/(b^4*g^4)) + 1/6*B*d^3*i^3*(((18*a*b
^2*x^2 + 27*a^2*b*x + 11*a^3 + 6*(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*
log(b*x + a))*log((b*x + a)^n) - (18*a*b^2*x^2 + 27*a^2*b*x + 11*a^3 + 6*(b
^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*log(b*x + a))*log((d*x + c)^n))/(b^
7*g^4*x^3 + 3*a*b^6*g^4*x^2 + 3*a^2*b^5*g^4*x + a^3*b^4*g^4) + 6*integrate(
1/6*(6*b^4*d*x^4*log(e) + 6*b^4*c*x^3*log(e) - 11*a^3*b*c*n + 11*a^4*d*n -
18*(a*b^3*c*n - a^2*b^2*d*n)*x^2 - 27*(a^2*b^2*c*n - a^3*b*d*n)*x - 6*(a^3*
b*c*n - a^4*d*n + (b^4*c*n - a*b^3*d*n)*x^3 + 3*(a*b^3*c*n - a^2*b^2*d*n)*x
^2 + 3*(a^2*b^2*c*n - a^3*b*d*n)*x)*log(b*x + a))/(b^8*d*g^4*x^5 + a^4*b^4*
c*g^4 + (b^8*c*g^4 + 4*a*b^7*d*g^4)*x^4 + 2*(2*a*b^7*c*g^4 + 3*a^2*b^6*d*g^
4)*x^3 + 2*(3*a^2*b^6*c*g^4 + 2*a^3*b^5*d*g^4)*x^2 + (4*a^3*b^5*c*g^4 + a^4
*b^4*d*g^4)*x), x)) - 1/2*(3*b*x + a)*B*c^2*d*i^3*log(e*(b*x/(d*x + c) + a/
(d*x + c))^n)/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^
4) - (3*b^2*x^2 + 3*a*b*x + a^2)*B*c*d^2*i^3*log(e*(b*x/(d*x + c) + a/(d*x
+ c))^n)/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) -
1/2*(3*b*x + a)*A*c^2*d*i^3/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*
x + a^3*b^2*g^4) - (3*b^2*x^2 + 3*a*b*x + a^2)*A*c*d^2*i^3/(b^6*g^4*x^3 + 3
*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 1/3*B*c^3*i^3*log(e*(b*x/
(d*x + c) + a/(d*x + c))^n)/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*
x + a^3*b*g^4) - 1/3*A*c^3*i^3/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g
^4*x + a^3*b*g^4)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,i+d\,i\,x\right)}^3\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{{\left(a\,g+b\,g\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
4,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
4, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**4,x)
```

```
[Out] Timed out
```

3.135 $\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ci+dix}\,dx$

Optimal. Leaf size=269

$$\frac{g^3(bc-ad)^3\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(6B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+6A+11Bn\right)}{6d^4i}+\frac{g^3(a+bx)(bc-ad)^2\left(6B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+6A+\right.}{6d^3i}$$

```
[Out] 1/3*g^3*(b*x+a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d/i-1/6*(-a*d+b*c)*g^3*(b
*x+a)^2*(3*A+B*n+3*B*ln(e*((b*x+a)/(d*x+c))^n))/d^2/i+1/6*(-a*d+b*c)^2*g^3*
(b*x+a)*(6*A+5*B*n+6*B*ln(e*((b*x+a)/(d*x+c))^n))/d^3/i+1/6*(-a*d+b*c)^3*g^
3*(6*A+11*B*n+6*B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/d^4/i
+B*(-a*d+b*c)^3*g^3*n*polylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i
```

Rubi [A] time = 0.65, antiderivative size = 426, normalized size of antiderivative = 1.58, number of steps used = 22, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.302, Rules used = {2528, 2486, 31, 2525, 12, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{Bg^3n(bc-ad)^3\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^4i}-\frac{g^3(a+bx)^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2d^2i}-\frac{g^3(bc-ad)^3\log(ci+dix)}{d^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x),
x]
```

```
[Out] (A*b*(b*c - a*d)^2*g^3*x)/(d^3*i) + (5*b*B*(b*c - a*d)^2*g^3*n*x)/(6*d^3*i)
 - (B*(b*c - a*d)*g^3*n*(a + b*x)^2)/(6*d^2*i) + (B*(b*c - a*d)^2*g^3*(a +
b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(d^3*i) - ((b*c - a*d)*g^3*(a + b*x)^2
*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^2*i) + (g^3*(a + b*x)^3*(A +
B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*d*i) - (11*B*(b*c - a*d)^3*g^3*n*Log[
c + d*x])/(6*d^4*i) - (B*(b*c - a*d)^3*g^3*n*Log[i*(c + d*x)]^2)/(2*d^4*i)
+ (B*(b*c - a*d)^3*g^3*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c*i + d*i*x]
)/(d^4*i) - ((b*c - a*d)^3*g^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c
*i + d*i*x])/(d^4*i) + (B*(b*c - a*d)^3*g^3*n*PolyLog[2, (b*(c + d*x))/(b*c
 - a*d)])/(d^4*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{135c+135dx}\,dx = \int \left(\frac{b(bc-ad)^2g^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{135d^3} + \frac{(-bc+ad)^3g^3\left(A+\right.}{d^3(135c+}\right.$$

$$= \frac{(bg)\int (ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx}{135d} - \frac{\left(b(bc-ad)g^2\right)\int}{}$$

$$= \frac{Ab(bc-ad)^2g^3x}{135d^3} - \frac{(bc-ad)g^3(a+bx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{270d^2}$$

$$= \frac{Ab(bc-ad)^2g^3x}{135d^3} + \frac{B(bc-ad)^2g^3(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{135d^3} - \frac{(bc-}{}$$

$$= \frac{Ab(bc-ad)^2g^3x}{135d^3} + \frac{B(bc-ad)^2g^3(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{135d^3} - \frac{(bc-}{}$$

$$= \frac{Ab(bc-ad)^2g^3x}{135d^3} + \frac{bB(bc-ad)^2g^3nx}{162d^3} - \frac{B(bc-ad)g^3n(a+bx)^2}{810d^2}$$

$$= \frac{Ab(bc-ad)^2g^3x}{135d^3} + \frac{bB(bc-ad)^2g^3nx}{162d^3} - \frac{B(bc-ad)g^3n(a+bx)^2}{810d^2}$$

$$= \frac{Ab(bc-ad)^2g^3x}{135d^3} + \frac{bB(bc-ad)^2g^3nx}{162d^3} - \frac{B(bc-ad)g^3n(a+bx)^2}{810d^2}$$

Mathematica [A] time = 0.30, size = 370, normalized size = 1.38

$$\frac{g^3\left(2d^3(a+bx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+3d^2(a+bx)^2(ad-bc)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-6(bc-ad)^3\log(i(c}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d
*i*x),x]
```

```
[Out] (g^3*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b
*x)/(c + d*x))^n] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]) + 2*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
 - 6*B*(b*c - a*d)^3*n*Log[c + d*x] + B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x
- d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*n*(b*
d*x + (-(b*c) + a*d)*Log[c + d*x]) - 6*(b*c - a*d)^3*(A + B*Log[e*((a + b*x
```

```
)/(c + d*x))^n])*Log[i*(c + d*x)] + 3*B*(b*c - a*d)^3*n*((2*Log[(d*(a + b*x
))/(-(b*c) + a*d)] - Log[i*(c + d*x)])*Log[i*(c + d*x)] + 2*PolyLog[2, (b*(
c + d*x))/(b*c - a*d)])))/(6*d^4*i)
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ab^3g^3x^3 + 3\,Aab^2g^3x^2 + 3\,Aa^2bg^3x + Aa^3g^3 + \left(Bb^3g^3x^3 + 3\,Bab^2g^3x^2 + 3\,Ba^2bg^3x + Ba^3g^3\right)\log\left(e\left(\frac{b}{d}\right.\right.}{dix + ci}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, alg
orithm="fricas")
```

```
[Out] integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 +
 (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log(e*((
b*x + a)/(d*x + c))^n))/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^3\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)}{dix + ci}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)
```

```
[Out] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)
```

maxima [B] time = 4.29, size = 1003, normalized size = 3.73

$$3\,Aa^2bg^3\left(\frac{x}{di} - \frac{c\log\left(dx + c\right)}{d^2i}\right) - \frac{1}{6}\,Ab^3g^3\left(\frac{6\,c^3\log\left(dx + c\right)}{d^4i} - \frac{2\,d^2x^3 - 3\,cdx^2 + 6\,c^2x}{d^3i}\right) + \frac{3}{2}\,Aab^2g^3\left(\frac{2\,c^2\log\left(dx + c\right)}{d^3i}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, alg
orithm="maxima")
```

```
[Out] 3*A*a^2*b*g^3*(x/(d*i) - c*log(d*x + c)/(d^2*i)) - 1/6*A*b^3*g^3*(6*c^3*log
(d*x + c)/(d^4*i) - (2*d^2*x^3 - 3*c*d*x^2 + 6*c^2*x)/(d^3*i)) + 3/2*A*a*b^
2*g^3*(2*c^2*log(d*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A*a^3*g^3*lo
g(d*i*x + c*i)/(d*i) - (b^3*c^3*g^3*n - 3*a*b^2*c^2*d*g^3*n + 3*a^2*b*c*d^2
*g^3*n - a^3*d^3*g^3*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) +
dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^4*i) + 1/6*(6*a^3*d^3*g^3*log(e) -
(11*g^3*n + 6*g^3*log(e))*b^3*c^3 + 9*(3*g^3*n + 2*g^3*log(e))*a*b^2*c^2*d
- 18*(g^3*n + g^3*log(e))*a^2*b*c*d^2)*B*log(d*x + c)/(d^4*i) + 1/6*(2*B*b^
3*d^3*g^3*x^3*log(e) - ((g^3*n + 3*g^3*log(e))*b^3*c*d^2 - (g^3*n + 9*g^3*l
```

```
og(e))*a*b^2*d^3)*B*x^2 + 6*(b^3*c^3*g^3*n - 3*a*b^2*c^2*d*g^3*n + 3*a^2*b*
c*d^2*g^3*n - a^3*d^3*g^3*n)*B*log(b*x + a)*log(d*x + c) - 3*(b^3*c^3*g^3*n
 - 3*a*b^2*c^2*d*g^3*n + 3*a^2*b*c*d^2*g^3*n - a^3*d^3*g^3*n)*B*log(d*x + c
)^2 + ((5*g^3*n + 6*g^3*log(e))*b^3*c^2*d - 6*(2*g^3*n + 3*g^3*log(e))*a*b^
2*c*d^2 + (7*g^3*n + 18*g^3*log(e))*a^2*b*d^3)*B*x + (6*a*b^2*c^2*d*g^3*n -
 15*a^2*b*c*d^2*g^3*n + 11*a^3*d^3*g^3*n)*B*log(b*x + a) + (2*B*b^3*d^3*g^3
*x^3 - 3*(b^3*c*d^2*g^3 - 3*a*b^2*d^3*g^3)*B*x^2 + 6*(b^3*c^2*d*g^3 - 3*a*b
^2*c*d^2*g^3 + 3*a^2*b*d^3*g^3)*B*x - 6*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 +
3*a^2*b*c*d^2*g^3 - a^3*d^3*g^3)*B*log(d*x + c))*log((b*x + a)^n) - (2*B*b^
3*d^3*g^3*x^3 - 3*(b^3*c*d^2*g^3 - 3*a*b^2*d^3*g^3)*B*x^2 + 6*(b^3*c^2*d*g^
3 - 3*a*b^2*c*d^2*g^3 + 3*a^2*b*d^3*g^3)*B*x - 6*(b^3*c^3*g^3 - 3*a*b^2*c^2
*d*g^3 + 3*a^2*b*c*d^2*g^3 - a^3*d^3*g^3)*B*log(d*x + c))*log((d*x + c)^n))
/(d^4*i)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)^3\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{c\,i+d\,i\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x),
x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x),
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

3.136 $\int \frac{(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ci+dix}\,dx$

Optimal. Leaf size=211

$$-\frac{g^2(bc-ad)^2\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(2B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+2A+3Bn\right)}{2d^3i}-\frac{g^2(a+bx)(bc-ad)\left(2B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+2A+Bn\right.}{2d^2i}$$

```
[Out] 1/2*g^2*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d/i-1/2*(-a*d+b*c)*g^2*(b
*x+a)*(2*A+B*n+2*B*ln(e*((b*x+a)/(d*x+c))^n))/d^2/i-1/2*(-a*d+b*c)^2*g^2*(2
*A+3*B*n+2*B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/d^3/i-B*(-
a*d+b*c)^2*g^2*n*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i
```

Rubi [A] time = 0.49, antiderivative size = 343, normalized size of antiderivative = 1.63, number of steps used = 18, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.302, Rules used = {2528, 2486, 31, 2525, 12, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{Bg^2n(bc-ad)^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^3i}+\frac{g^2(bc-ad)^2\log(ci+dix)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^3i}+\frac{g^2(a+bx)^2\left(B\log\left(e\left(\right.\right.\right.}{2di}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x),
x]
```

```
[Out] -((A*b*(b*c - a*d)*g^2*x)/(d^2*i)) - (b*B*(b*c - a*d)*g^2*n*x)/(2*d^2*i) -
(B*(b*c - a*d)*g^2*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(d^2*i) + (g^2
*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d*i) + (3*B*(b*c -
a*d)^2*g^2*n*Log[c + d*x])/(2*d^3*i) + (B*(b*c - a*d)^2*g^2*n*Log[i*(c + d*
x)]^2)/(2*d^3*i) - (B*(b*c - a*d)^2*g^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]
*Log[c*i + d*i*x])/(d^3*i) + ((b*c - a*d)^2*g^2*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n])*Log[c*i + d*i*x])/(d^3*i) - (B*(b*c - a*d)^2*g^2*n*PolyLog[2, (
b*(c + d*x))/(b*c - a*d)])/(d^3*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
```

```
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{136c+136dx}\,dx=\int\left(-\frac{b(bc-ad)g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{136d^2}+\frac{(bc-ad)^2g^2\left(A+B\,\mathrm{lo}\right.}{d^2(136c+13}\right.$$

$$=\frac{(bg)\int(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx}{136d}-\frac{\left(b(bc-ad)g^2\right)\int\left(A\right.}{1}$$

$$=-\frac{Ab(bc-ad)g^2x}{136d^2}+\frac{g^2(a+bx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{272d}+\frac{(bc-ad}{}$$

$$=-\frac{Ab(bc-ad)g^2x}{136d^2}-\frac{B(bc-ad)g^2(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{136d^2}+\frac{g^2(a+b}{}$$

$$=-\frac{Ab(bc-ad)g^2x}{136d^2}-\frac{B(bc-ad)g^2(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{136d^2}+\frac{g^2(a+b}{}$$

$$=-\frac{Ab(bc-ad)g^2x}{136d^2}-\frac{bB(bc-ad)g^2nx}{272d^2}-\frac{B(bc-ad)g^2(a+bx)\log\left(e\right.}{136d^2}$$

$$=-\frac{Ab(bc-ad)g^2x}{136d^2}-\frac{bB(bc-ad)g^2nx}{272d^2}-\frac{B(bc-ad)g^2(a+bx)\log\left(e\right.}{136d^2}$$

$$=-\frac{Ab(bc-ad)g^2x}{136d^2}-\frac{bB(bc-ad)g^2nx}{272d^2}-\frac{B(bc-ad)g^2(a+bx)\log\left(e\right.}{136d^2}$$

Mathematica [A] time = 0.19, size = 266, normalized size = 1.26

$$g^2\left(d^2(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2(bc-ad)^2\log(i(c+dx))\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-2Abdx(bc-ad)+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d
*i*x),x]
```

```
[Out] (g^2*(-2*A*b*d*(b*c - a*d)*x + 2*B*d*(-(b*c) + a*d)*(a + b*x)*Log[e*((a + b
*x)/(c + d*x))^n] + d^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
+ 2*B*(b*c - a*d)^2*n*Log[c + d*x] - B*(b*c - a*d)*n*(b*d*x + (-(b*c) + a*d
)*Log[c + d*x]) + 2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Lo
g[i*(c + d*x)] - B*(b*c - a*d)^2*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] -
Log[i*(c + d*x)])*Log[i*(c + d*x)] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
])))/(2*d^3*i)
```

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{Ab^2g^2x^2+2\,Aabg^2x+Aa^2g^2+\left(Bb^2g^2x^2+2\,Babg^2x+Ba^2g^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{dix+ci},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, alg
orithm="fricas")
```

```
[Out] integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*
a*b*g^2*x + B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n))/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{2} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)}{dix+ci}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)
```

```
[Out] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)
```

maxima [B] time = 4.69, size = 627, normalized size = 2.97

$$2\,Aabg^{2}\left(\frac{x}{di}-\frac{c\log\left(dx+c\right)}{d^{2}i}\right)+\frac{1}{2}\,Ab^{2}g^{2}\left(\frac{2\,c^{2}\log\left(dx+c\right)}{d^{3}i}+\frac{dx^{2}-2\,cx}{d^{2}i}\right)+\frac{Aa^{2}g^{2}\log\left(dix+ci\right)}{di}+\frac{\left(b^{2}c^{2}g^{2}n-2\,a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, alg
orithm="maxima")
```

```
[Out] 2*A*a*b*g^2*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + 1/2*A*b^2*g^2*(2*c^2*log(d
*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A*a^2*g^2*log(d*i*x + c*i)/(d*
i) + (b^2*c^2*g^2*n - 2*a*b*c*d*g^2*n + a^2*d^2*g^2*n)*(log(b*x + a)*log((b
*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^3*i)
 + 1/2*(2*a^2*d^2*g^2*log(e) + (3*g^2*n + 2*g^2*log(e))*b^2*c^2 - 4*(g^2*n
+ g^2*log(e))*a*b*c*d)*B*log(d*x + c)/(d^3*i) + 1/2*(B*b^2*d^2*g^2*x^2*log(
e) - 2*(b^2*c^2*g^2*n - 2*a*b*c*d*g^2*n + a^2*d^2*g^2*n)*B*log(b*x + a)*log
(d*x + c) + (b^2*c^2*g^2*n - 2*a*b*c*d*g^2*n + a^2*d^2*g^2*n)*B*log(d*x + c
)^2 - ((g^2*n + 2*g^2*log(e))*b^2*c*d - (g^2*n + 4*g^2*log(e))*a*b*d^2)*B*x
 - (2*a*b*c*d*g^2*n - 3*a^2*d^2*g^2*n)*B*log(b*x + a) + (B*b^2*d^2*g^2*x^2
- 2*(b^2*c*d*g^2 - 2*a*b*d^2*g^2)*B*x + 2*(b^2*c^2*g^2 - 2*a*b*c*d*g^2 + a^
2*d^2*g^2)*B*log(d*x + c))*log((b*x + a)^n) - (B*b^2*d^2*g^2*x^2 - 2*(b^2*c
*d*g^2 - 2*a*b*d^2*g^2)*B*x + 2*(b^2*c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)
*B*log(d*x + c))*log((d*x + c)^n))/(d^3*i)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^2\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{c\,i+d\,i\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x),
x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x),
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

3.137 $\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{ci+dix}\,dx$

Optimal. Leaf size=134

$$\frac{g(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A+Bn\right)}{d^2i}+\frac{g(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{di}+\frac{Bgn(bc-ad)\text{Li}_2\left(\frac{d}{b}\right.}{d^2i}$$

```
[Out] g*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d/i+(-a*d+b*c)*g*(A+B*n+B*ln(e*((
b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/d^2/i+B*(-a*d+b*c)*g*n*polylog
(2,d*(b*x+a)/b/(d*x+c))/d^2/i
```

Rubi [A] time = 0.39, antiderivative size = 223, normalized size of antiderivative = 1.66, number of steps used = 13, number of rules used = 10, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.244, Rules used = {2528, 2486, 31, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{Bgn(bc-ad)\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^2i}-\frac{g(bc-ad)\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2i}-\frac{Bgn(bc-ad)\log^2(c+dx)}{2d^2i}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x),x]
```

```
[Out] (A*b*g*x)/(d*i) + (B*g*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(d*i) - (B
*(b*c - a*d)*g*n*Log[c + d*x])/(d^2*i) + (B*(b*c - a*d)*g*n*Log[-((d*(a + b
*x))/(b*c - a*d))]*Log[c + d*x])/(d^2*i) - ((b*c - a*d)*g*(A + B*Log[e*((a
+ b*x)/(c + d*x))^n])*Log[c + d*x])/(d^2*i) - (B*(b*c - a*d)*g*n*Log[c + d*
x]^2)/(2*d^2*i) + (B*(b*c - a*d)*g*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])
/(d^2*i)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{137c+137dx}\,dx = \int \left(\frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{137d} + \frac{(-bc+ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{137d(c+dx)}\right.$$

$$= \frac{(bg)\int\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx}{137d} - \frac{((bc-ad)g)\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.}{c+dx}}{137d}$$

$$= \frac{Abgx}{137d} - \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(c+dx)}{137d^2} + \frac{(bBg)\int}{}$$

$$= \frac{Abgx}{137d} + \frac{Bg(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{137d} - \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{137d^2}$$

$$= \frac{Abgx}{137d} + \frac{Bg(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{137d} - \frac{B(bc-ad)gn\log(c+dx)}{137d^2} -$$

$$= \frac{Abgx}{137d} + \frac{Bg(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{137d} - \frac{B(bc-ad)gn\log(c+dx)}{137d^2} +$$

$$= \frac{Abgx}{137d} + \frac{Bg(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{137d} - \frac{B(bc-ad)gn\log(c+dx)}{137d^2} +$$

$$= \frac{Abgx}{137d} + \frac{Bg(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{137d} - \frac{B(bc-ad)gn\log(c+dx)}{137d^2} +$$

Mathematica [A] time = 0.12, size = 170, normalized size = 1.27

$$\frac{g\left(-2(bc-ad)\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2Bd(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+Bn(bc-ad)\left(2\text{Li}_2\left(\frac{b(c+dx)}{bc-ad}\right.\right.\right.}{2d^2i}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i
*x),x]
```

```
[Out] (g*(2*A*b*d*x + 2*B*d*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 2*B*(b*c -
 a*d)*n*Log[c + d*x] - 2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
*Log[c + d*x] + B*(b*c - a*d)*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log
[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(2*d^2
*i)
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Abgx+Aag+\left(Bbgx+Bag\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{dix+ci},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, algor
ithm="fricas")
```

```
[Out] integral((A*b*g*x + A*a*g + (B*b*g*x + B*a*g)*log(e*((b*x + a)/(d*x + c))^n
))/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)}{dix+ci}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)
```

```
[Out] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)
```

maxima [B] time = 4.05, size = 306, normalized size = 2.28

$$Abg\left(\frac{x}{di}-\frac{c\log\left(dx+c\right)}{d^{2}i}\right)+\frac{Aag\log\left(dix+ci\right)}{di}-\frac{\left(bcgn-adgn\right)\left(\log\left(bx+a\right)\log\left(\frac{bdx+ad}{bc-ad}+1\right)+\mathrm{Li}_{2}\left(-\frac{bdx+ad}{bc-ad}\right)\right)B}{d^{2}i}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, algor
ithm="maxima")
```

```
[Out] A*b*g*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + A*a*g*log(d*i*x + c*i)/(d*i) - (
b*c*g*n - a*d*g*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog
(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^2*i) + (a*d*g*log(e) - (g*n + g*log(e))*
b*c)*B*log(d*x + c)/(d^2*i) + 1/2*(2*B*a*d*g*n*log(b*x + a) + 2*B*b*d*g*x*l
og(e) + 2*(b*c*g*n - a*d*g*n)*B*log(b*x + a)*log(d*x + c) - (b*c*g*n - a*d*
g*n)*B*log(d*x + c)^2 + 2*(B*b*d*g*x - (b*c*g - a*d*g)*B*log(d*x + c))*log(
(b*x + a)^n) - 2*(B*b*d*g*x - (b*c*g - a*d*g)*B*log(d*x + c))*log((d*x + c)
^n))/(d^2*i)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a\,g+b\,g\,x\right)\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{c\,i+d\,i\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x),x)
```

```
[Out] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x), x
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{g\left(\int \frac{Aa}{c+dx}\,dx+\int \frac{Abx}{c+dx}\,dx+\int \frac{Ba\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^{n}\right)}{c+dx}\,dx+\int \frac{Bbx\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^{n}\right)}{c+dx}\,dx\right)}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i),x)
```

```
[Out] g*(Integral(A*a/(c + d*x), x) + Integral(A*b*x/(c + d*x), x) + Integral(B*a
*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(c + d*x), x) + Integral(B*b*x*log
(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(c + d*x), x))/i
```

3.138 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{ci+dix}\,dx$

Optimal. Leaf size=80

$$-\frac{\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{di}-\frac{Bn\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)}{di}$$

```
[Out] -(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/d/i-B*n*polylog(2
,d*(b*x+a)/b/(d*x+c))/d/i
```

Rubi [A] time = 0.20, antiderivative size = 128, normalized size of antiderivative = 1.60, number of steps used = 9, number of rules used = 8, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.242, Rules used = {2524, 2418, 2394, 2393, 2391, 2390, 12, 2301}

$$-\frac{Bn\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{di}+\frac{\log(ci+dix)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{di}-\frac{Bn\log(ci+dix)\log\left(-\frac{d(a+bx)}{bc-ad}\right)}{di}+\frac{Bn\log^2(i(c+}{2di}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x),x]
```

```
[Out] (B*n*Log[i*(c + d*x)]^2)/(2*d*i) - (B*n*Log[-((d*(a + b*x))/(b*c - a*d))]*L
og[c*i + d*i*x])/(d*i) + ((A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c*i +
d*i*x])/(d*i) - (B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{138c+138dx}\,dx = \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(138c+138dx)}{138d} - \frac{(Bn)\int \frac{(c+dx)\left(-\frac{d(a+bx)}{(c+dx)^2}+\frac{b}{c+dx}\right)\log(138c\cdots}{a+bx}}{138d}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(138c+138dx)}{138d} - \frac{(Bn)\int \left(\frac{b\log(138c+138dx)}{a+bx} - \frac{d\log(138\cdots}{c+\cdots}\right)}{138d}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(138c+138dx)}{138d} + \frac{1}{138}(Bn)\int \frac{\log(138c+138dx)}{c+dx}\,d\cdots$$

$$= -\frac{Bn\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(138c+138dx)}{138d} + \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(138c+1\cdots}{138d}$$

$$= -\frac{Bn\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(138c+138dx)}{138d} + \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(138c+1\cdots}{138d}$$

$$= \frac{Bn\log^2(138(c+dx))}{276d} - \frac{Bn\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(138c+138dx)}{138d} + \frac{\left(A+B\log\left(e\left(\cdots\right.\right.\right.}{\cdots}$$

Mathematica [A] time = 0.03, size = 101, normalized size = 1.26

$$\frac{\log(i(c+dx))\left(2B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)-2Bn\log\left(\frac{d(a+bx)}{ad-bc}\right)+2A+Bn\log(i(c+dx))\right)-2Bn\text{Li}_2\left(\frac{b(c+dx)}{bc-ad}\right)}{2di}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x),x]
```

```
[Out] (Log[i*(c + d*x)]*(2*A - 2*B*n*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*B*Log[
e*((a + b*x)/(c + d*x))^n] + B*n*Log[i*(c + d*x)]) - 2*B*n*PolyLog[2, (b*(c
 + d*x))/(b*c - a*d)])/(2*d*i)
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{dix+ci},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, algorithm="fricas
")
```

```
[Out] integral((B*log(e*((b*x + a)/(d*x + c))^n) + A)/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{dix+ci}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}B\left(\frac{2n\log(bx+a)\log(dx+c)-n\log(dx+c)^{2}-2\log(dx+c)\log\left((bx+a)^{n}\right)+2\log(dx+c)\log\left((dx+c\right.}{di}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i),x, algorithm="maxima
")
```

```
[Out] -1/2*B*((2*n*log(b*x + a)*log(d*x + c) - n*log(d*x + c)^2 - 2*log(d*x + c)*
log((b*x + a)^n) + 2*log(d*x + c)*log((d*x + c)^n))/(d*i) - 2*integrate((n*
log(b*x + a) + log(e))/(d*i*x + c*i), x)) + A*log(d*i*x + c*i)/(d*i)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^{n}\right)}{c\,i+d\,i\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/(c*i + d*i*x),x)
```

```
[Out] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/(c*i + d*i*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A}{c+dx}\,dx + \int \frac{B\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^{n}\right)}{c+dx}\,dx}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i),x)
```

```
[Out] (Integral(A/(c + d*x), x) + Integral(B*log(e*(a/(c + d*x) + b*x/(c + d*x))*
*n)/(c + d*x), x))/i
```

3.139 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)(ci+dix)}\,dx$

Optimal. Leaf size=50

$$\frac{\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2Bgin(bc-ad)}$$

[Out] 1/2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/B/(-a*d+b*c)/g/i/n

Rubi [C] time = 0.56, antiderivative size = 316, normalized size of antiderivative = 6.32, number of steps used = 18, number of rules used = 8, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.186$, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bn\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{gi(bc-ad)}+\frac{Bn\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{gi(bc-ad)}+\frac{\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{gi(bc-ad)}-\frac{\log(c+dx)\left(B\log\left(e\left(\right.\right.\right.}{gi(bc-ad}$$

Antiderivative was successfully verified.

[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)*(c*i + d*i*x)),x]

[Out] -(B*n*Log[a + b*x]^2)/(2*(b*c - a*d)*g*i) + (Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)*g*i) + (B*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)*g*i) - ((A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)*g*i) - (B*n*Log[c + d*x]^2)/(2*(b*c - a*d)*g*i) + (B*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (B*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)*g*i) + (B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i)

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
```

```
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(139c+139dx)(ag+bgx)}\,dx = \int\left(\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc-ad)g(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc-ad)g(c+dx)}\right)dx$$

$$= \frac{b\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}\,dx}{139(bc-ad)g} - \frac{d\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}\,dx}{139(bc-ad)g}$$

$$= \frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc-ad)g} - \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(c+dx)}{139(bc-ad)g}$$

$$= \frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc-ad)g} - \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(c+dx)}{139(bc-ad)g}$$

$$= \frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc-ad)g} - \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(c+dx)}{139(bc-ad)g}$$

$$= \frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc-ad)g} + \frac{Bn\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(c+dx)}{139(bc-ad)g} - \frac{(A}{}$$

$$= -\frac{Bn\log^2(a+bx)}{278(bc-ad)g} + \frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc-ad)g} + \frac{Bn\log\left(-\frac{d(a+b}{bc-a}\right.}{139(bc}$$

$$= -\frac{Bn\log^2(a+bx)}{278(bc-ad)g} + \frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{139(bc-ad)g} + \frac{Bn\log\left(-\frac{d(a+b}{bc-a}\right.}{139(bc}$$

Mathematica [C] time = 0.11, size = 219, normalized size = 4.38

$$\frac{2A\log(a+bx)+2B\log(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)-2B\log(c+dx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+2Bn\mathrm{Li}_2\left(\frac{d(a+bx)}{ad-bc}\right)+2Bn\mathrm{Li}_2\left(\frac{b}{\cdots}\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)*(c*i + d*i*
x)),x]
```

```
[Out] (2*A*Log[a + b*x] - B*n*Log[a + b*x]^2 + 2*B*Log[a + b*x]*Log[e*((a + b*x)/
(c + d*x))^n] - 2*A*Log[c + d*x] + 2*B*n*Log[(d*(a + b*x))/(-(b*c) + a*d)]*
Log[c + d*x] - 2*B*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x] - B*n*Log[c
+ d*x]^2 + 2*B*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] + 2*B*n*PolyLo
g[2, (d*(a + b*x))/(-(b*c) + a*d)] + 2*B*n*PolyLog[2, (b*(c + d*x))/(b*c -
a*d)])/(2*(b*c - a*d)*g*i)
```

fricas [A] time = 0.93, size = 74, normalized size = 1.48

$$\frac{Bn\log\left(\frac{bx+a}{dx+c}\right)^2+2\,B\log(e)\log\left(\frac{bx+a}{dx+c}\right)+2\,A\log\left(\frac{bx+a}{dx+c}\right)}{2\,(bc-ad)gi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i),x, algor
ithm="fricas")
```

```
[Out] 1/2*(B*n*log((b*x + a)/(d*x + c))^2 + 2*B*log(e)*log((b*x + a)/(d*x + c)) +
 2*A*log((b*x + a)/(d*x + c)))/((b*c - a*d)*g*i)
```

giac [A] time = 1.22, size = 90, normalized size = 1.80

$$-\frac{\left(Bin\log\left(\frac{bx+a}{dx+c}\right)^2+2\,Ai\log\left(\frac{bx+a}{dx+c}\right)+2\,Bi\log\left(\frac{bx+a}{dx+c}\right)\right)\left(\frac{bc}{(bc-ad)^2}-\frac{ad}{(bc-ad)^2}\right)}{2\,g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i),x, algor
ithm="giac")
```

```
[Out] -1/2*(B*i*n*log((b*x + a)/(d*x + c))^2 + 2*A*i*log((b*x + a)/(d*x + c)) + 2
*B*i*log((b*x + a)/(d*x + c)))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)/g
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int\frac{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A}{\left(bgx+ag\right)\left(dix+ci\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i),x)
```

maxima [B] time = 1.22, size = 175, normalized size = 3.50

$$B\left(\frac{\log(bx+a)}{(bc-ad)gi}-\frac{\log(dx+c)}{(bc-ad)gi}\right)\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^n\right)-\frac{\left(\log(bx+a)^2-2\,\log(bx+a)\log(dx+c)+\log(dx\cdots\right.}{2\left(bcgi-adgi\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i),x, algor
ithm="maxima")
```

```
[Out] B*(log(b*x + a)/((b*c - a*d)*g*i) - log(d*x + c)/((b*c - a*d)*g*i))*log(e*(
b*x/(d*x + c) + a/(d*x + c))^n) - 1/2*(log(b*x + a)^2 - 2*log(b*x + a)*log(
d*x + c) + log(d*x + c)^2)*B*n/(b*c*g*i - a*d*g*i) + A*(log(b*x + a)/((b*c
- a*d)*g*i) - log(d*x + c)/((b*c - a*d)*g*i))
```

mupad [B] time = 5.72, size = 76, normalized size = 1.52

$$-\frac{B\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2-A\,n\,\mathrm{atan}\left(\frac{b\,c\,2\mathrm{i}+b\,d\,x\,2\mathrm{i}}{a\,d-b\,c}+1\mathrm{i}\right)\,4\mathrm{i}}{2\,g\,i\,n\,\left(a\,d-b\,c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)*(c*i + d*i*x)),x)
```

```
[Out] -(B*log(e*((a + b*x)/(c + d*x))^n)^2 - A*n*atan((b*c*2i + b*d*x*2i)/(a*d -
b*c) + 1i)*4i)/(2*g*i*n*(a*d - b*c))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A}{ac+adx+bcx+bdx^2}\,dx+\int \frac{B\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)}{ac+adx+bcx+bdx^2}\,dx}{gi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)/(d*i*x+c*i),x)
```

```
[Out] (Integral(A/(a*c + a*d*x + b*c*x + b*d*x**2), x) + Integral(B*log(e*(a/(c +
 d*x) + b*x/(c + d*x))**n)/(a*c + a*d*x + b*c*x + b*d*x**2), x))/(g*i)
```

3.140 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^2(ci+dix)}\,dx$

Optimal. Leaf size=181

$$-\frac{d\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i(bc-ad)^2}-\frac{b(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i(a+bx)(bc-ad)^2}-\frac{bBn(c+dx)}{g^2i(a+bx)(bc-ad)^2}+\frac{Bdn\log^2\left(\frac{a+bx}{c+dx}\right)}{2g^2i(bc-ad)^2}$$

```
[Out] -b*B*n*(d*x+c)/(-a*d+b*c)^2/g^2/i/(b*x+a)-b*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x
+c))^n))/(-a*d+b*c)^2/g^2/i/(b*x+a)-d*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((b
*x+a)/(d*x+c))/(-a*d+b*c)^2/g^2/i+1/2*B*d*n*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c
)^2/g^2/i
```

Rubi [C] time = 0.69, antiderivative size = 455, normalized size of antiderivative = 2.51, number of steps used = 22, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{BdnPolyLog\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^2i(bc-ad)^2}-\frac{BdnPolyLog\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^2i(bc-ad)^2}-\frac{d\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i(bc-ad)^2}-\frac{B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{g^2i(a+bx)(bc-}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*i*x)),
x]
```

```
[Out] -((B*n)/((b*c - a*d)*g^2*i*(a + b*x))) - (B*d*n*Log[a + b*x])/((b*c - a*d)^
2*g^2*i) + (B*d*n*Log[a + b*x]^2)/(2*(b*c - a*d)^2*g^2*i) - (A + B*Log[e*((
a + b*x)/(c + d*x))^n])/((b*c - a*d)*g^2*i*(a + b*x)) - (d*Log[a + b*x]*(A
+ B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g^2*i) + (B*d*n*Log[c +
 d*x])/((b*c - a*d)^2*g^2*i) - (B*d*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log
[c + d*x])/((b*c - a*d)^2*g^2*i) + (d*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
)*Log[c + d*x])/((b*c - a*d)^2*g^2*i) + (B*d*n*Log[c + d*x]^2)/(2*(b*c - a*
d)^2*g^2*i) - (B*d*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a
*d)^2*g^2*i) - (B*d*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d
)^2*g^2*i) - (B*d*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g
^2*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(140c+140dx)(ag+bgx)^2}\,dx = \int \left(\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc-ad)g^2(a+bx)^2} - \frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc-ad)^2g^2(a+bx)} + \frac{d^2\left(A+B\log\right.}{140(bc-ad)}\right.$$

$$= -\frac{(bd)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}dx}{140(bc-ad)^2g^2} + \frac{d^2\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}dx}{140(bc-ad)^2g^2} + \frac{b\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)^2}}{140(bc-ad)g^2}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{140(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc-ad)^2g^2} + \frac{d\left(A+B\right.}{}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{140(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc-ad)^2g^2} + \frac{d\left(A+B\right.}{}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{140(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{140(bc-ad)^2g^2} + \frac{d\left(A+B\right.}{}$$

$$= -\frac{Bn}{140(bc-ad)g^2(a+bx)} - \frac{Bdn\log(a+bx)}{140(bc-ad)^2g^2} - \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{140(bc-ad)g^2(a+bx)} - \frac{d\log}{}$$

$$= -\frac{Bn}{140(bc-ad)g^2(a+bx)} - \frac{Bdn\log(a+bx)}{140(bc-ad)^2g^2} + \frac{Bdn\log^2(a+bx)}{280(bc-ad)^2g^2} - \frac{A+B\log}{140(bc-}$$

$$= -\frac{Bn}{140(bc-ad)g^2(a+bx)} - \frac{Bdn\log(a+bx)}{140(bc-ad)^2g^2} + \frac{Bdn\log^2(a+bx)}{280(bc-ad)^2g^2} - \frac{A+B\log}{140(bc-}$$

Mathematica [C] time = 0.29, size = 304, normalized size = 1.68

$$-\frac{2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2d(a+bx)\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-2d(a+bx)\log(c+dx)\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*
i*x)),x]
```

```
[Out] -1/2*(2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*d*(a + b*x)*
Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*d*(a + b*x)*(A + B*
Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 2*B*n*(b*c - a*d + d*(a + b*
x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - B*d*n*(a + b*x)*(Log[a + b*x]
*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b
*x))/(-(b*c) + a*d)]) + B*d*n*(a + b*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d
)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))
/((b*c - a*d)^2*g^2*i*(a + b*x))
```

fricas [A] time = 0.77, size = 194, normalized size = 1.07

$$-\frac{2\,Abc-2\,Aad+(Bbdnx+Badn)\log\left(\frac{bx+a}{dx+c}\right)^2+2\,(Bbc-Bad)n+2\left(Bbc-Bad+(Bbdx+Bad)\log\left(\frac{bx+a}{dx+c}\right)\right)\log}{2\left(\left(b^3c^2-2\,ab^2cd+a^2bd^2\right)g^2ix+\left(ab^2c^2-2\,a^2bcd+a^3d^2\right)g^2i\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i),x, alg
orithm="fricas")
```

```
[Out] -1/2*(2*A*b*c - 2*A*a*d + (B*b*d*n*x + B*a*d*n)*log((b*x + a)/(d*x + c))^2
+ 2*(B*b*c - B*a*d)*n + 2*(B*b*c - B*a*d + (B*b*d*x + B*a*d)*log((b*x + a)/
(d*x + c)))*log(e) + 2*(B*b*c*n + A*a*d + (B*b*d*n + A*b*d)*x)*log((b*x + a
)/(d*x + c)))/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^2*i*x + (a*b^2*c^2 - 2
*a^2*b*c*d + a^3*d^2)*g^2*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i),x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{\left(bgx+ag\right)^{2}\left(dix+ci\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2/(d*i*x+c*i),x)
```

maxima [B] time = 1.29, size = 427, normalized size = 2.36

$$-B\left(\frac{1}{\left(b^{2}c-abd\right)g^{2}ix+\left(abc-a^{2}d\right)g^{2}i}+\frac{d\log\left(bx+a\right)}{\left(b^{2}c^{2}-2\,abcd+a^{2}d^{2}\right)g^{2}i}-\frac{d\log\left(dx+c\right)}{\left(b^{2}c^{2}-2\,abcd+a^{2}d^{2}\right)g^{2}i}\right)\log\left(e\left(\frac{bx}{dx+c}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i),x, alg
orithm="maxima")
```

```
[Out] -B*(1/((b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/((
b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*c*
d + a^2*d^2)*g^2*i))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*((b*d*x +
 a*d)*log(b*x + a)^2 + (b*d*x + a*d)*log(d*x + c)^2 - 2*b*c + 2*a*d - 2*(b*
d*x + a*d)*log(b*x + a) + 2*(b*d*x + a*d - (b*d*x + a*d)*log(b*x + a))*log(
d*x + c))*B*n/(a*b^2*c^2*g^2*i - 2*a^2*b*c*d*g^2*i + a^3*d^2*g^2*i + (b^3*c
^2*g^2*i - 2*a*b^2*c*d*g^2*i + a^2*b*d^2*g^2*i)*x) - A*(1/((b^2*c - a*b*d)*
g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a
^2*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i))
```

mupad [B] time = 6.08, size = 239, normalized size = 1.32

$$\frac{A}{g^2\,i\,\left(a\,d-b\,c\right)\,\left(a+b\,x\right)}+\frac{B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)}{g^2\,i\,\left(a\,d-b\,c\right)\,\left(a+b\,x\right)}+\frac{B\,n}{g^2\,i\,\left(a\,d-b\,c\right)\,\left(a+b\,x\right)}-\frac{B\,d\,{\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)}^2}{2\,g^2\,i\,n\,{\left(a\,d-b\,c\right)}^2}+\frac{A\,d\,\mathrm{atan}\left(\frac{a\,d}{\right.}\right.}{g^2\,i\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^2*(c*i + d*i*x)),
x)
```

```
[Out] A/(g^2*i*(a*d - b*c)*(a + b*x)) + (B*log(e*((a + b*x)/(c + d*x))^n))/(g^2*i
*(a*d - b*c)*(a + b*x)) + (A*d*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c
))*2i)/(g^2*i*(a*d - b*c)^2) + (B*n)/(g^2*i*(a*d - b*c)*(a + b*x)) + (B*d*n
*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g^2*i*(a*d - b*c)^2) -
 (B*d*log(e*((a + b*x)/(c + d*x))^n)^2)/(2*g^2*i*n*(a*d - b*c)^2)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**2/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

3.141 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^3(ci+dix)}\,dx$

Optimal. Leaf size=266

$$-\frac{b^2(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^3i(a+bx)^2(bc-ad)^3}+\frac{d^2\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^3i(bc-ad)^3}+\frac{2bd(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{g^3i(a+bx)(bc-ad)^3}$$

```
[Out] -1/4*B*n*(d*x+c)^2*(b-4*d*(b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g^3/i/(b*x+a)^2+2
*b*d*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^3/i/(b*x+a)-1/2
*b^2*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^3/i/(b*x+a)^2
+d^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((b*x+a)/(d*x+c))/(-a*d+b*c)^3/g^3/i
-1/2*B*d^2*n*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g^3/i
```

Rubi [C] time = 0.83, antiderivative size = 557, normalized size of antiderivative = 2.09, number of steps used = 26, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{Bd^2n\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^3i(bc-ad)^3}+\frac{Bd^2n\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^3i(bc-ad)^3}+\frac{d^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^3i(bc-ad)^3}-\frac{d^2\log(c+d}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*i*x)),
x]
```

```
[Out] -(B*n)/(4*(b*c - a*d)*g^3*i*(a + b*x)^2) + (3*B*d*n)/(2*(b*c - a*d)^2*g^3*i
*(a + b*x)) + (3*B*d^2*n*Log[a + b*x])/(2*(b*c - a*d)^3*g^3*i) - (B*d^2*n*L
og[a + b*x]^2)/(2*(b*c - a*d)^3*g^3*i) - (A + B*Log[e*((a + b*x)/(c + d*x))
^n])/(2*(b*c - a*d)*g^3*i*(a + b*x)^2) + (d*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]))/((b*c - a*d)^2*g^3*i*(a + b*x)) + (d^2*Log[a + b*x]*(A + B*Log[e*(
(a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g^3*i) - (3*B*d^2*n*Log[c + d*x])/
(2*(b*c - a*d)^3*g^3*i) + (B*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c
+ d*x])/((b*c - a*d)^3*g^3*i) - (d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
*Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (B*d^2*n*Log[c + d*x]^2)/(2*(b*c - a
*d)^3*g^3*i) + (B*d^2*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c
- a*d)^3*g^3*i) + (B*d^2*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c
- a*d)^3*g^3*i) + (B*d^2*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a
*d)^3*g^3*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(141c+141dx)(ag+bgx)^3}\,dx = \int \left(\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc-ad)g^3(a+bx)^3} - \frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc-ad)^2g^3(a+bx)^2} + \frac{bd^2\left(A+B\right.}{141(bc-\right.}$$

$$= \frac{(bd^2)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}dx}{141(bc-ad)^3g^3} - \frac{d^3\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}dx}{141(bc-ad)^3g^3} - \frac{(bd)\int \frac{A+B\log\left(e\left(\frac{a+l}{c+d}\right.\right.}{(a+bx)^2}}{141(bc-ad)^2}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{282(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(\right.}{141(l}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{282(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(\right.}{141(l}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{282(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{141(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(\right.}{141(l}$$

$$= -\frac{Bn}{564(bc-ad)g^3(a+bx)^2} + \frac{Bdn}{94(bc-ad)^2g^3(a+bx)} + \frac{Bd^2n\log(a+bx)}{94(bc-ad)^3g^3} -$$

$$= -\frac{Bn}{564(bc-ad)g^3(a+bx)^2} + \frac{Bdn}{94(bc-ad)^2g^3(a+bx)} + \frac{Bd^2n\log(a+bx)}{94(bc-ad)^3g^3} -$$

$$= -\frac{Bn}{564(bc-ad)g^3(a+bx)^2} + \frac{Bdn}{94(bc-ad)^2g^3(a+bx)} + \frac{Bd^2n\log(a+bx)}{94(bc-ad)^3g^3} -$$

Mathematica [C] time = 0.41, size = 434, normalized size = 1.63

$$\frac{4d^2(a+bx)^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) - 4d^2(a+bx)^2\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) - 2(bc-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*
i*x)),x]
```

```
[Out] (-2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d*(b*c - a*d)*
(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d^2*(a + b*x)^2*Log[a
+ b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 4*d^2*(a + b*x)^2*(A + B*Lo
g[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 4*B*d*n*(a + b*x)*(b*c - a*d +
 d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - B*n*((b*c - a*d)^2
+ 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a
+ b*x)^2*Log[c + d*x]) - 2*B*d^2*n*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x]
- 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) +
a*d)]) + 2*B*d^2*n*(a + b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[
c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(4*(b*c
- a*d)^3*g^3*i*(a + b*x)^2)
```

fricas [A] time = 0.93, size = 483, normalized size = 1.82

$$-\frac{2\,Ab^2c^2 - 8\,Aabcd + 6\,Aa^2d^2 - 2\left(Bb^2d^2nx^2 + 2\,Babd^2nx + Ba^2d^2n\right)\log\left(\frac{bx+a}{dx+c}\right)^2 + \left(Bb^2c^2 - 8\,Babcd + 7\,Ba^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i),x, alg
orithm="fricas")
```

```
[Out] -1/4*(2*A*b^2*c^2 - 8*A*a*b*c*d + 6*A*a^2*d^2 - 2*(B*b^2*d^2*n*x^2 + 2*B*a*
b*d^2*n*x + B*a^2*d^2*n)*log((b*x + a)/(d*x + c))^2 + (B*b^2*c^2 - 8*B*a*b*
c*d + 7*B*a^2*d^2)*n - 2*(2*A*b^2*c*d - 2*A*a*b*d^2 + 3*(B*b^2*c*d - B*a*b*
d^2)*n)*x + 2*(B*b^2*c^2 - 4*B*a*b*c*d + 3*B*a^2*d^2 - 2*(B*b^2*c*d - B*a*b
*d^2)*x - 2*(B*b^2*d^2*x^2 + 2*B*a*b*d^2*x + B*a^2*d^2)*log((b*x + a)/(d*x
+ c)))*log(e) - 2*(2*A*a^2*d^2 + (3*B*b^2*d^2*n + 2*A*b^2*d^2)*x^2 - (B*b^2
*c^2 - 4*B*a*b*c*d)*n + 2*(2*A*a*b*d^2 + (B*b^2*c*d + 2*B*a*b*d^2)*n)*x)*lo
g((b*x + a)/(d*x + c)))/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b
^2*d^3)*g^3*i*x^2 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^2*d + 3*a^3*b^2*c*d^2 - a^4*
b*d^3)*g^3*i*x + (a^2*b^3*c^3 - 3*a^3*b^2*c^2*d + 3*a^4*b*c*d^2 - a^5*d^3)*
g^3*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i),x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{\left(bgx+ag\right)^{3} \left(dix+ci\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i),x)
```

maxima [B] time = 1.73, size = 888, normalized size = 3.34

$$\frac{1}{2}B\left(\frac{2\,bdx-bc+3\,ad}{\left(b^4c^2-2\,ab^3cd+a^2b^2d^2\right)g^3ix^2+2\left(ab^3c^2-2\,a^2b^2cd+a^3bd^2\right)g^3ix+\left(a^2b^2c^2-2\,a^3bcd+a^4d^2\right)g^3i}+\frac{}{\left(b^3c^3-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i),x, alg
orithm="maxima")
```

```
[Out] 1/2*B*((2*b*d*x - b*c + 3*a*d)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3*i
*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a^2*b^2*c^2 - 2
*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d
 + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i) - 2*d^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2
*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i))*log(e*(b*x/(d*x + c) + a/(d*x + c
))^n) - 1/4*(b^2*c^2 - 8*a*b*c*d + 7*a^2*d^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x
 + a^2*d^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(d*
x + c)^2 - 6*(b^2*c*d - a*b*d^2)*x - 6*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2
)*log(b*x + a) + 2*(3*b^2*d^2*x^2 + 6*a*b*d^2*x + 3*a^2*d^2 - 2*(b^2*d^2*x^
2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a))*log(d*x + c))*B*n/(a^2*b^3*c^3*g^3
*i - 3*a^3*b^2*c^2*d*g^3*i + 3*a^4*b*c*d^2*g^3*i - a^5*d^3*g^3*i + (b^5*c^3
```

```
*g^3*i - 3*a*b^4*c^2*d*g^3*i + 3*a^2*b^3*c*d^2*g^3*i - a^3*b^2*d^3*g^3*i)*x
^2 + 2*(a*b^4*c^3*g^3*i - 3*a^2*b^3*c^2*d*g^3*i + 3*a^3*b^2*c*d^2*g^3*i - a
^4*b*d^3*g^3*i)*x) + 1/2*A*((2*b*d*x - b*c + 3*a*d)/((b^4*c^2 - 2*a*b^3*c*d
 + a^2*b^2*d^2)*g^3*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i
*x + (a^2*b^2*c^2 - 2*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d^2*log(b*x + a)/((b^
3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i) - 2*d^2*log(d*x + c
)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i))
```

mupad [B] time = 6.34, size = 573, normalized size = 2.15

$$\frac{B\,d^2\,\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\left(\frac{g^3\,i\,n\,(a\,d-b\,c)\,(2\,a\,d-b\,c)}{2\,d^2}+\frac{a\,g^3\,i\,n\,(a\,d-b\,c)}{2\,d}+\frac{b\,g^3\,i\,n\,x\,(a\,d-b\,c)}{d}\right)}{g^3\,i\,n\,(a\,d-b\,c)\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)\left(i\,a^2\,g^3+2\,i\,a\,b\,g^3\,x+i\,b^2\,g^3\,x^2\right)}-\frac{B\,d^2\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2}{2\,g^3\,i\,n\,(a\,d-b\,c)\,\left(a^2\,d^2-2\,a\,b\,c\,d\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^3*(c*i + d*i*x)),
x)
```

```
[Out] (d^2*atan((d^2*(A + (3*B*n)/2)*(2*a^3*d^3*g^3*i + 2*b^3*c^3*g^3*i - 2*a*b^2
*c^2*d*g^3*i - 2*a^2*b*c*d^2*g^3*i)*1i)/(g^3*i*(2*A*d^2 + 3*B*d^2*n)*(a*d -
 b*c)^3) + (b*d^3*x*(A + (3*B*n)/2)*(a^2*d^2*g^3*i + b^2*c^2*g^3*i - 2*a*b*
c*d*g^3*i)*4i)/(g^3*i*(2*A*d^2 + 3*B*d^2*n)*(a*d - b*c)^3))*(A + (3*B*n)/2)
*2i)/(g^3*i*(a*d - b*c)^3) - ((6*A*a*d - 2*A*b*c + 7*B*a*d*n - B*b*c*n)/(2*
(a*d - b*c)) + (d*x*(2*A*b + 3*B*b*n))/(a*d - b*c))/(x^2*(2*b^3*c*g^3*i - 2
*a*b^2*d*g^3*i) + x*(4*a*b^2*c*g^3*i - 4*a^2*b*d*g^3*i) - 2*a^3*d*g^3*i + 2
*a^2*b*c*g^3*i) - (B*d^2*log(e*((a + b*x)/(c + d*x))^n)^2)/(2*g^3*i*n*(a*d
- b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B*d^2*log(e*((a + b*x)/(c + d*x)
)^n)*((g^3*i*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2) + (a*g^3*i*n*(a*d - b*c))
/(2*d) + (b*g^3*i*n*x*(a*d - b*c))/d))/(g^3*i*n*(a*d - b*c)*(a^2*d^2 + b^2*
c^2 - 2*a*b*c*d)*(a^2*g^3*i + b^2*g^3*i*x^2 + 2*a*b*g^3*i*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**3/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

3.142 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^4(ci+dix)}\,dx$

Optimal. Leaf size=389

$$-\frac{b^3(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3g^4i(a+bx)^3(bc-ad)^4}+\frac{3b^2d(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^4i(a+bx)^2(bc-ad)^4}-\frac{d^3\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+\right.}{g^4i(bc-ad)^4}$$

```
[Out] -3*b*B*d^2*n*(d*x+c)/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/4*b^2*B*d*n*(d*x+c)^2/(-a
*d+b*c)^4/g^4/i/(b*x+a)^2-1/9*b^3*B*n*(d*x+c)^3/(-a*d+b*c)^4/g^4/i/(b*x+a)^
3-3*b*d^2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^4/i/(b*x+a
)+3/2*b^2*d*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^4/i/(b
*x+a)^2-1/3*b^3*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^4/
i/(b*x+a)^3-d^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((b*x+a)/(d*x+c))/(-a*d+b
*c)^4/g^4/i+1/2*B*d^3*n*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^4/g^4/i
```

Rubi [C] time = 1.08, antiderivative size = 646, normalized size of antiderivative = 1.66, number of steps used = 30, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{Bd^3n\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^4i(bc-ad)^4}-\frac{Bd^3n\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^4i(bc-ad)^4}-\frac{d^3\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^4i(bc-ad)^4}+\frac{d^3\log(c+dx)}{g}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*i*x)),
x]
```

```
[Out] -(B*n)/(9*(b*c - a*d)*g^4*i*(a + b*x)^3) + (5*B*d*n)/(12*(b*c - a*d)^2*g^4*
i*(a + b*x)^2) - (11*B*d^2*n)/(6*(b*c - a*d)^3*g^4*i*(a + b*x)) - (11*B*d^3
*n*Log[a + b*x])/(6*(b*c - a*d)^4*g^4*i) + (B*d^3*n*Log[a + b*x]^2)/(2*(b*c
 - a*d)^4*g^4*i) - (A + B*Log[e*((a + b*x)/(c + d*x))^n])/(3*(b*c - a*d)*g^
4*i*(a + b*x)^3) + (d*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d
)^2*g^4*i*(a + b*x)^2) - (d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c
 - a*d)^3*g^4*i*(a + b*x)) - (d^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c +
 d*x))^n]))/((b*c - a*d)^4*g^4*i) + (11*B*d^3*n*Log[c + d*x])/(6*(b*c - a*d
)^4*g^4*i) - (B*d^3*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c
 - a*d)^4*g^4*i) + (d^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x]
)/((b*c - a*d)^4*g^4*i) + (B*d^3*n*Log[c + d*x]^2)/(2*(b*c - a*d)^4*g^4*i)
- (B*d^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*
i) - (B*d^3*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^4*
i) - (B*d^3*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(142c+142dx)(ag+bgx)^4}\,dx = \int \left(\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{142(bc-ad)g^4(a+bx)^4} - \frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{142(bc-ad)^2g^4(a+bx)^3} + \frac{bd^2\left(A+B\log\right.}{142(bc-ad)}\right.$$

$$= -\frac{\left(bd^3\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}\,dx}{142(bc-ad)^4g^4} + \frac{d^4\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}\,dx}{142(bc-ad)^4g^4} + \frac{\left(bd^2\right)\int \frac{A+B\log\left(e\left(\frac{a+}{c+}\right.\right.}{(a+bx)^2}}{142(bc-ad)^3}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{426(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{284(bc-ad)^2g^4(a+bx)^2} - \frac{d^2\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{142(bc-ad)^3g^4(a}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{426(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{284(bc-ad)^2g^4(a+bx)^2} - \frac{d^2\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{142(bc-ad)^3g^4(a}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{426(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{284(bc-ad)^2g^4(a+bx)^2} - \frac{d^2\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{142(bc-ad)^3g^4(a}$$

$$= -\frac{Bn}{1278(bc-ad)g^4(a+bx)^3} + \frac{5Bdn}{1704(bc-ad)^2g^4(a+bx)^2} - \frac{11Bd^2n}{852(bc-ad)^3g^4(a}$$

$$= -\frac{Bn}{1278(bc-ad)g^4(a+bx)^3} + \frac{5Bdn}{1704(bc-ad)^2g^4(a+bx)^2} - \frac{11Bd^2n}{852(bc-ad)^3g^4(a}$$

$$= -\frac{Bn}{1278(bc-ad)g^4(a+bx)^3} + \frac{5Bdn}{1704(bc-ad)^2g^4(a+bx)^2} - \frac{11Bd^2n}{852(bc-ad)^3g^4(a}$$

Mathematica [C] time = 0.72, size = 518, normalized size = 1.33

$$\frac{\frac{36Ad^2(ad-bc)}{a+bx} + \frac{18Ad(bc-ad)^2}{(a+bx)^2} - \frac{12A(bc-ad)^3}{(a+bx)^3} - 36Ad^3\log(a+bx) - 36Bd^3\log(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + 36Bd^3\log(c+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*
i*x)),x]
```

```
[Out] ((-12*A*(b*c - a*d)^3)/(a + b*x)^3 - (4*B*(b*c - a*d)^3*n)/(a + b*x)^3 + (1
8*A*d*(b*c - a*d)^2)/(a + b*x)^2 + (15*B*d*(b*c - a*d)^2*n)/(a + b*x)^2 + (
36*A*d^2*(-(b*c) + a*d))/(a + b*x) + (66*B*d^2*(-(b*c) + a*d)*n)/(a + b*x)
- 36*A*d^3*Log[a + b*x] - 66*B*d^3*n*Log[a + b*x] + 18*B*d^3*n*Log[a + b*x]
^2 - (12*B*(b*c - a*d)^3*Log[e*((a + b*x)/(c + d*x))^n])/(a + b*x)^3 + (18*
B*d*(b*c - a*d)^2*Log[e*((a + b*x)/(c + d*x))^n])/(a + b*x)^2 + (36*B*d^2*(
-(b*c) + a*d)*Log[e*((a + b*x)/(c + d*x))^n])/(a + b*x) - 36*B*d^3*Log[a +
b*x]*Log[e*((a + b*x)/(c + d*x))^n] + 36*A*d^3*Log[c + d*x] + 66*B*d^3*n*Lo
g[c + d*x] - 36*B*d^3*n*Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c + d*x] + 36
*B*d^3*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x] + 18*B*d^3*n*Log[c + d*x
]^2 - 36*B*d^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] - 36*B*d^3*n*P
olyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] - 36*B*d^3*n*PolyLog[2, (b*(c + d*x
))/(b*c - a*d)])/(36*(b*c - a*d)^4*g^4*i)
```

fricas [B] time = 0.99, size = 859, normalized size = 2.21

$$-\frac{12\,Ab^3c^3 - 54\,Aab^2c^2d + 108\,Aa^2bcd^2 - 66\,Aa^3d^3 + 6\left(6\,Ab^3cd^2 - 6\,Aab^2d^3 + 11\left(Bb^3cd^2 - Bab^2d^3\right)n\right)x^2 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i),x, alg
orithm="fricas")
```

```
[Out] -1/36*(12*A*b^3*c^3 - 54*A*a*b^2*c^2*d + 108*A*a^2*b*c*d^2 - 66*A*a^3*d^3 +
 6*(6*A*b^3*c*d^2 - 6*A*a*b^2*d^3 + 11*(B*b^3*c*d^2 - B*a*b^2*d^3)*n)*x^2 +
 18*(B*b^3*d^3*n*x^3 + 3*B*a*b^2*d^3*n*x^2 + 3*B*a^2*b*d^3*n*x + B*a^3*d^3*
n)*log((b*x + a)/(d*x + c))^2 + (4*B*b^3*c^3 - 27*B*a*b^2*c^2*d + 108*B*a^2
*b*c*d^2 - 85*B*a^3*d^3)*n - 3*(6*A*b^3*c^2*d - 36*A*a*b^2*c*d^2 + 30*A*a^2
*b*d^3 + (5*B*b^3*c^2*d - 54*B*a*b^2*c*d^2 + 49*B*a^2*b*d^3)*n)*x + 6*(2*B*
b^3*c^3 - 9*B*a*b^2*c^2*d + 18*B*a^2*b*c*d^2 - 11*B*a^3*d^3 + 6*(B*b^3*c*d^
2 - B*a*b^2*d^3)*x^2 - 3*(B*b^3*c^2*d - 6*B*a*b^2*c*d^2 + 5*B*a^2*b*d^3)*x
+ 6*(B*b^3*d^3*x^3 + 3*B*a*b^2*d^3*x^2 + 3*B*a^2*b*d^3*x + B*a^3*d^3)*log((
b*x + a)/(d*x + c)))*log(e) + 6*(6*A*a^3*d^3 + (11*B*b^3*d^3*n + 6*A*b^3*d^
3)*x^3 + 3*(6*A*a*b^2*d^3 + (2*B*b^3*c*d^2 + 9*B*a*b^2*d^3)*n)*x^2 + (2*B*b
^3*c^3 - 9*B*a*b^2*c^2*d + 18*B*a^2*b*c*d^2)*n + 3*(6*A*a^2*b*d^3 - (B*b^3*
c^2*d - 6*B*a*b^2*c*d^2 - 6*B*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c)))/((
b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4
)*g^4*i*x^3 + 3*(a*b^6*c^4 - 4*a^2*b^5*c^3*d + 6*a^3*b^4*c^2*d^2 - 4*a^4*b^
3*c*d^3 + a^5*b^2*d^4)*g^4*i*x^2 + 3*(a^2*b^5*c^4 - 4*a^3*b^4*c^3*d + 6*a^4
*b^3*c^2*d^2 - 4*a^5*b^2*c*d^3 + a^6*b*d^4)*g^4*i*x + (a^3*b^4*c^4 - 4*a^4*
b^3*c^3*d + 6*a^5*b^2*c^2*d^2 - 4*a^6*b*c*d^3 + a^7*d^4)*g^4*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i),x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{\left(bgx+ag\right)^{4}\left(dix+ci\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i),x)
```

maxima [B] time = 2.36, size = 1472, normalized size = 3.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i),x, alg
orithm="maxima")
```

```
[Out] -1/6*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d -
5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^
4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)*g
^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*
g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3)*g^4*i)
+ 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*
b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d +
6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i))*log(e*(b*x/(d*x + c) +
 a/(d*x + c))^n) - 1/36*(4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 - 85*
a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^
2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3
*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*b^2*
c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x
 + a^3*d^3)*log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*
d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3
*d^3)*log(b*x + a))*log(d*x + c))*B*n/(a^3*b^4*c^4*g^4*i - 4*a^4*b^3*c^3*d*
g^4*i + 6*a^5*b^2*c^2*d^2*g^4*i - 4*a^6*b*c*d^3*g^4*i + a^7*d^4*g^4*i + (b^
7*c^4*g^4*i - 4*a*b^6*c^3*d*g^4*i + 6*a^2*b^5*c^2*d^2*g^4*i - 4*a^3*b^4*c*d
^3*g^4*i + a^4*b^3*d^4*g^4*i)*x^3 + 3*(a*b^6*c^4*g^4*i - 4*a^2*b^5*c^3*d*g^
4*i + 6*a^3*b^4*c^2*d^2*g^4*i - 4*a^4*b^3*c*d^3*g^4*i + a^5*b^2*d^4*g^4*i)*
x^2 + 3*(a^2*b^5*c^4*g^4*i - 4*a^3*b^4*c^3*d*g^4*i + 6*a^4*b^3*c^2*d^2*g^4*
i - 4*a^5*b^2*c*d^3*g^4*i + a^6*b*d^4*g^4*i)*x) - 1/6*A*((6*b^2*d^2*x^2 + 2
*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^3 -
3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4*i*x^3 + 3*(a*b^5*c^3 - 3
*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)*g^4*i*x^2 + 3*(a^2*b^4*c^3
- 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*g^4*i*x + (a^3*b^3*c^3 - 3
*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3)*g^4*i) + 6*d^3*log(b*x + a)/((b^4
*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i)
- 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*
b*c*d^3 + a^4*d^4)*g^4*i))
```

mupad [B] time = 7.23, size = 986, normalized size = 2.53

$$\frac{\frac{66\,A\,a^2\,d^2+12\,A\,b^2\,c^2+85\,B\,a^2\,d^2\,n+4\,B\,b^2\,c^2\,n-42\,A\,a\,b\,c\,d-23\,B\,a\,b\,c\,d\,n}{6\,(a\,d-b\,c)}+\frac{x\left(30\,A\,a\,b\,d^2-6\,A\,b\cdots\right.}{\cdots}}{x\left(18\,i\,a^4\,b\,d^2\,g^4-36\,i\,a^3\,b^2\,c\,d\,g^4+18\,i\,a^2\,b^3\,c^2\,g^4\right)+x^2\left(18\,i\,a^3\,b^2\,d^2\,g^4-36\,i\,a^2\,b^3\,c\,d\,g^4+18\,i\,a\,b^4\,c^2\,g^4\right)+x^3\left(\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^4*(c*i + d*i*x)),
x)
```

```
[Out] ((66*A*a^2*d^2 + 12*A*b^2*c^2 + 85*B*a^2*d^2*n + 4*B*b^2*c^2*n - 42*A*a*b*c
*d - 23*B*a*b*c*d*n)/(6*(a*d - b*c)) + (x*(30*A*a*b*d^2 - 6*A*b^2*c*d + 49*
B*a*b*d^2*n - 5*B*b^2*c*d*n))/(2*(a*d - b*c)) + (d*x^2*(6*A*b^2*d + 11*B*b^
2*d*n))/(a*d - b*c))/(x*(18*a^4*b*d^2*g^4*i + 18*a^2*b^3*c^2*g^4*i - 36*a^3
*b^2*c*d*g^4*i) + x^2*(18*a*b^4*c^2*g^4*i + 18*a^3*b^2*d^2*g^4*i - 36*a^2*b
^3*c*d*g^4*i) + x^3*(6*b^5*c^2*g^4*i + 6*a^2*b^3*d^2*g^4*i - 12*a*b^4*c*d*g
^4*i) + 6*a^5*d^2*g^4*i + 6*a^3*b^2*c^2*g^4*i - 12*a^4*b*c*d*g^4*i) + (d^3*
atan((d^3*((a^4*d^4*g^4*i - b^4*c^4*g^4*i + 2*a*b^3*c^3*d*g^4*i - 2*a^3*b*c
*d^3*g^4*i)/(a^3*d^3*g^4*i - b^3*c^3*g^4*i + 3*a*b^2*c^2*d*g^4*i - 3*a^2*b*
c*d^2*g^4*i) + 2*b*d*x)*(A + (11*B*n)/6)*(a^3*d^3*g^4*i - b^3*c^3*g^4*i + 3
*a*b^2*c^2*d*g^4*i - 3*a^2*b*c*d^2*g^4*i)*6i)/(g^4*i*(6*A*d^3 + 11*B*d^3*n)
*(a*d - b*c)^4))*(A + (11*B*n)/6)*2i)/(g^4*i*(a*d - b*c)^4) - (B*d^3*log(e*
((a + b*x)/(c + d*x))^n)^2)/(2*g^4*i*n*(a*d - b*c)*(a^3*d^3 - b^3*c^3 + 3*a
*b^2*c^2*d - 3*a^2*b*c*d^2)) + (B*d^3*log(e*((a + b*x)/(c + d*x))^n)*(x*(b*
((g^4*i*n*(a*d - b*c)*(3*a*d - b*c))/(6*d^2) + (a*g^4*i*n*(a*d - b*c))/(3*d
)) + (2*a*b*g^4*i*n*(a*d - b*c))/(3*d) + (b*g^4*i*n*(a*d - b*c)*(3*a*d - b*
c))/(3*d^2)) + a*((g^4*i*n*(a*d - b*c)*(3*a*d - b*c))/(6*d^2) + (a*g^4*i*n*
```

```
(a*d - b*c))/(3*d)) + (g^4*i*n*(a*d - b*c)*(3*a^2*d^2 + b^2*c^2 - 3*a*b*c*d
))/(3*d^3) + (b^2*g^4*i*n*x^2*(a*d - b*c))/d))/(g^4*i*n*(a*d - b*c)*(a^3*d^
3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)*(a^3*g^4*i + b^3*g^4*i*x^3 + 3
*a^2*b*g^4*i*x + 3*a*b^2*g^4*i*x^2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**4/(d*i*x+c*i),x)
[Out] Timed out
```

3.143 $\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ci+dix)^2}\,dx$

Optimal. Leaf size=359

$$-\frac{bg^3(bc-ad)^2\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(6B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+6A+5Bn\right)}{2d^4i^2}-\frac{g^3(a+bx)(6A+5Bn)(bc-ad)^2}{2d^3i^2(c+dx)}-\frac{g^3(a+bx)^2(bc-}{}$$

```
[Out] 3*B*(-a*d+b*c)^2*g^3*n*(b*x+a)/d^3/i^2/(d*x+c)-1/2*(-a*d+b*c)^2*g^3*(5*B*n+
6*A)*(b*x+a)/d^3/i^2/(d*x+c)-3*B*(-a*d+b*c)^2*g^3*(b*x+a)*ln(e*((b*x+a)/(d*
x+c))^n)/d^3/i^2/(d*x+c)+1/2*g^3*(b*x+a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/
d/i^2/(d*x+c)-1/2*(-a*d+b*c)*g^3*(b*x+a)^2*(3*A+B*n+3*B*ln(e*((b*x+a)/(d*x+
c))^n))/d^2/i^2/(d*x+c)-1/2*b*(-a*d+b*c)^2*g^3*(6*A+5*B*n+6*B*ln(e*((b*x+a)
/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/d^4/i^2-3*b*B*(-a*d+b*c)^2*g^3*n*pol
ylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i^2
```

Rubi [A] time = 0.73, antiderivative size = 541, normalized size of antiderivative = 1.51, number of steps used = 21, number of rules used = 14, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.326, Rules used = {2528, 2486, 31, 2525, 12, 72, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{3bBg^3n(bc-ad)^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^4i^2}-\frac{a^2bBg^3n\log(a+bx)}{2d^2i^2}+\frac{b^3g^3x^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2d^2i^2}-\frac{Ab^2g^3x(2bc-3}{d^3i^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^
2,x]
```

```
[Out] -((A*b^2*(2*b*c - 3*a*d)*g^3*x)/(d^3*i^2)) - (b^2*B*(b*c - a*d)*g^3*n*x)/(2
*d^3*i^2) - (B*(b*c - a*d)^3*g^3*n)/(d^4*i^2*(c + d*x)) - (a^2*b*B*g^3*n*Lo
g[a + b*x])/(2*d^2*i^2) - (b*B*(b*c - a*d)^2*g^3*n*Log[a + b*x])/(d^4*i^2)
- (b*B*(2*b*c - 3*a*d)*g^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(d^3*i
^2) + (b^3*g^3*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^2*i^2) + ((
b*c - a*d)^3*g^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^4*i^2*(c + d*x)
) + (b^3*B*c^2*g^3*n*Log[c + d*x])/(2*d^4*i^2) + (b*B*(2*b*c - 3*a*d)*(b*c
- a*d)*g^3*n*Log[c + d*x])/(d^4*i^2) + (b*B*(b*c - a*d)^2*g^3*n*Log[c + d*x
])/(d^4*i^2) - (3*b*B*(b*c - a*d)^2*g^3*n*Log[-((d*(a + b*x))/(b*c - a*d))]
*Log[c + d*x])/(d^4*i^2) + (3*b*(b*c - a*d)^2*g^3*(A + B*Log[e*((a + b*x)/(
c + d*x))^n])*Log[c + d*x])/(d^4*i^2) + (3*b*B*(b*c - a*d)^2*g^3*n*Log[c +
d*x]^2)/(2*d^4*i^2) - (3*b*B*(b*c - a*d)^2*g^3*n*PolyLog[2, (b*(c + d*x))/(
b*c - a*d)])/(d^4*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
```

```
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
```

```
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(143c+143dx)^2}\,dx = \int\left(-\frac{b^2(2bc-3ad)g^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{20449d^3}+\frac{b^3g^3x\left(A+B\log\left(\right.\right.}{20449d^2}\right.$$

$$=\frac{\left(b^3g^3\right)\int x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx}{20449d^2}-\frac{\left(b^2(2bc-3ad)g^3\right)\int\left(A+\right.}{20449d}$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{20449d^3}+\frac{b^3g^3x^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{40898d^2}+\frac{(bc-ad)^3}{}$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{20449d^3}-\frac{bB(2bc-3ad)g^3(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{20449d^3}+$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{20449d^3}-\frac{bB(2bc-3ad)g^3(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{20449d^3}+$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{20449d^3}-\frac{b^2B(bc-ad)g^3nx}{40898d^3}-\frac{B(bc-ad)^3g^3n}{20449d^4(c+dx)}-\frac{a^2b}{}$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{20449d^3}-\frac{b^2B(bc-ad)g^3nx}{40898d^3}-\frac{B(bc-ad)^3g^3n}{20449d^4(c+dx)}-\frac{a^2b}{}$$

$$=-\frac{Ab^2(2bc-3ad)g^3x}{20449d^3}-\frac{b^2B(bc-ad)g^3nx}{40898d^3}-\frac{B(bc-ad)^3g^3n}{20449d^4(c+dx)}-\frac{a^2b}{}$$

Mathematica [A] time = 0.45, size = 375, normalized size = 1.04

$$g^3\left(bBn\left(b\left(dx(ad-bc)+bc^2\log(c+dx)\right)-a^2d^2\log(a+bx)\right)+b^3d^2x^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-2Ab^2dx(2bc-\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d
*i*x)^2,x]
```

```
[Out] (g^3*(-2*A*b^2*d*(2*b*c - 3*a*d)*x - 2*b*B*d*(2*b*c - 3*a*d)*(a + b*x)*Log[
e*((a + b*x)/(c + d*x))^n] + b^3*d^2*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))
^n]) + (2*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) +
 2*b*B*(2*b*c - 3*a*d)*(b*c - a*d)*n*Log[c + d*x] + 6*b*(b*c - a*d)^2*(A +
B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 2*B*(b*c - a*d)^2*n*((b*c
- a*d)/(c + d*x) + b*Log[a + b*x] - b*Log[c + d*x]) + b*B*n*(-(a^2*d^2*Log[
a + b*x]) + b*(d*(-(b*c) + a*d)*x + b*c^2*Log[c + d*x])) - 3*b*B*(b*c - a*d
)^2*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] +
2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(2*d^4*i^2)
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ab^3g^3x^3 + 3\,Aab^2g^3x^2 + 3\,Aa^2bg^3x + Aa^3g^3 + \left(Bb^3g^3x^3 + 3\,Bab^2g^3x^2 + 3\,Ba^2bg^3x + Ba^3g^3\right)\log\left(e\right.}{d^2i^2x^2 + 2\,cdi^2x + c^2i^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, a
lgorithm="fricas")
```

```
[Out] integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 +
 (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log(e*((
b*x + a)/(d*x + c))^n))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^3 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)}{\left(dix + ci\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)
```

```
[Out] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)
```

maxima [B] time = 4.40, size = 1892, normalized size = 5.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, a
lgorithm="maxima")
```

```
[Out] B*a^3*g^3*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2)
 - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) + 1/2*(2*c^3/(d^5*i^2*x + c*d^4*i^
2) + 6*c^2*log(d*x + c)/(d^4*i^2) + (d*x^2 - 4*c*x)/(d^3*i^2))*A*b^3*g^3 -
3*A*a*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/(d^2*i^2) + 2*c*log(d*x + c)/(d^
3*i^2))*g^3 + 3*A*a^2*b*g^3*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*
i^2)) - B*a^3*g^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^2*i^2*x + c*d*i
^2) - A*a^3*g^3/(d^2*i^2*x + c*d*i^2) - 1/2*(6*a^3*b*d^3*g^3*log(e) - (7*g^
3*n + 6*g^3*log(e))*b^4*c^3 + (17*g^3*n + 18*g^3*log(e))*a*b^3*c^2*d - 6*(2
*g^3*n + 3*g^3*log(e))*a^2*b^2*c*d^2)*B*log(d*x + c)/(b*c*d^4*i^2 - a*d^5*i
^2) + 1/2*((b^4*c*d^3*g^3*log(e) - a*b^3*d^4*g^3*log(e))*B*x^3 - ((g^3*n +
3*g^3*log(e))*b^4*c^2*d^2 - (2*g^3*n + 9*g^3*log(e))*a*b^3*c*d^3 + (g^3*n +
 6*g^3*log(e))*a^2*b^2*d^4)*B*x^2 - ((g^3*n + 4*g^3*log(e))*b^4*c^3*d - 2*(
g^3*n + 5*g^3*log(e))*a*b^3*c^2*d^2 + (g^3*n + 6*g^3*log(e))*a^2*b^2*c*d^3)
*B*x - 6*((b^4*c^3*d*g^3*n - 3*a*b^3*c^2*d^2*g^3*n + 3*a^2*b^2*c*d^3*g^3*n
- a^3*b*d^4*g^3*n)*B*x + (b^4*c^4*g^3*n - 3*a*b^3*c^3*d*g^3*n + 3*a^2*b^2*c
^2*d^2*g^3*n - a^3*b*c*d^3*g^3*n)*B)*log(b*x + a)*log(d*x + c) + 3*((b^4*c^
3*d*g^3*n - 3*a*b^3*c^2*d^2*g^3*n + 3*a^2*b^2*c*d^3*g^3*n - a^3*b*d^4*g^3*n
)*B*x + (b^4*c^4*g^3*n - 3*a*b^3*c^3*d*g^3*n + 3*a^2*b^2*c^2*d^2*g^3*n - a^
3*b*c*d^3*g^3*n)*B)*log(d*x + c)^2 - 2*((g^3*n - g^3*log(e))*b^4*c^4 - 4*(g
^3*n - g^3*log(e))*a*b^3*c^3*d + 6*(g^3*n - g^3*log(e))*a^2*b^2*c^2*d^2 - 3
*(g^3*n - g^3*log(e))*a^3*b*c*d^3)*B - ((2*b^4*c^3*d*g^3*n - 2*a*b^3*c^2*d^
2*g^3*n - 3*a^2*b^2*c*d^3*g^3*n + 5*a^3*b*d^4*g^3*n)*B*x + (2*b^4*c^4*g^3*n
 - 2*a*b^3*c^3*d*g^3*n - 3*a^2*b^2*c^2*d^2*g^3*n + 5*a^3*b*c*d^3*g^3*n)*B)*
log(b*x + a) + ((b^4*c*d^3*g^3 - a*b^3*d^4*g^3)*B*x^3 - 3*(b^4*c^2*d^2*g^3
- 3*a*b^3*c*d^3*g^3 + 2*a^2*b^2*d^4*g^3)*B*x^2 - 2*(2*b^4*c^3*d*g^3 - 5*a*b
^3*c^2*d^2*g^3 + 3*a^2*b^2*c*d^3*g^3)*B*x + 2*(b^4*c^4*g^3 - 4*a*b^3*c^3*d*
g^3 + 6*a^2*b^2*c^2*d^2*g^3 - 3*a^3*b*c*d^3*g^3)*B + 6*((b^4*c^3*d*g^3 - 3*
a*b^3*c^2*d^2*g^3 + 3*a^2*b^2*c*d^3*g^3 - a^3*b*d^4*g^3)*B*x + (b^4*c^4*g^3
 - 3*a*b^3*c^3*d*g^3 + 3*a^2*b^2*c^2*d^2*g^3 - a^3*b*c*d^3*g^3)*B)*log(d*x
+ c))*log((b*x + a)^n) - ((b^4*c*d^3*g^3 - a*b^3*d^4*g^3)*B*x^3 - 3*(b^4*c^
2*d^2*g^3 - 3*a*b^3*c*d^3*g^3 + 2*a^2*b^2*d^4*g^3)*B*x^2 - 2*(2*b^4*c^3*d*g
^3 - 5*a*b^3*c^2*d^2*g^3 + 3*a^2*b^2*c*d^3*g^3)*B*x + 2*(b^4*c^4*g^3 - 4*a*
b^3*c^3*d*g^3 + 6*a^2*b^2*c^2*d^2*g^3 - 3*a^3*b*c*d^3*g^3)*B + 6*((b^4*c^3*
d*g^3 - 3*a*b^3*c^2*d^2*g^3 + 3*a^2*b^2*c*d^3*g^3 - a^3*b*d^4*g^3)*B*x + (b
^4*c^4*g^3 - 3*a*b^3*c^3*d*g^3 + 3*a^2*b^2*c^2*d^2*g^3 - a^3*b*c*d^3*g^3)*B
)*log(d*x + c))*log((d*x + c)^n))/(b*c^2*d^4*i^2 - a*c*d^5*i^2 + (b*c*d^5*i
^2 - a*d^6*i^2)*x) + 3*(b^3*c^2*g^3*n - 2*a*b^2*c*d*g^3*n + a^2*b*d^2*g^3*n
)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(
b*c - a*d)))*B/(d^4*i^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)^3\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{{\left(c\,i+d\,i\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
2,x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.144 $\int \frac{(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ci+dix)^2}\,dx$

Optimal. Leaf size=275

$$\frac{bg^2(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(2B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+2A+Bn\right)}{d^3i^2}+\frac{g^2(a+bx)(2A+Bn)(bc-ad)}{d^2i^2(c+dx)}+\frac{g^2(a+bx)^2\left(B\log\left(e\right.\right.}{di^2(c+d}$$

```
[Out] -2*B*(-a*d+b*c)*g^2*n*(b*x+a)/d^2/i^2/(d*x+c)+(-a*d+b*c)*g^2*(B*n+2*A)*(b*x
+a)/d^2/i^2/(d*x+c)+2*B*(-a*d+b*c)*g^2*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/d^
2/i^2/(d*x+c)+g^2*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d/i^2/(d*x+c)+b
*(-a*d+b*c)*g^2*(2*A+B*n+2*B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*
x+c))/d^3/i^2+2*b*B*(-a*d+b*c)*g^2*n*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i^2
```

Rubi [A] time = 0.53, antiderivative size = 351, normalized size of antiderivative = 1.28, number of steps used = 17, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.302, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{2bBg^2n(bc-ad)\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^3i^2}-\frac{g^2(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^3i^2(c+dx)}-\frac{2bg^2(bc-ad)\log(c+dx)\left(B\log\left(e\right.\right.}{d^3i^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^
2,x]
```

```
[Out] (A*b^2*g^2*x)/(d^2*i^2) + (B*(b*c - a*d)^2*g^2*n)/(d^3*i^2*(c + d*x)) + (b*
B*(b*c - a*d)*g^2*n*Log[a + b*x])/(d^3*i^2) + (b*B*g^2*(a + b*x)*Log[e*((a
+ b*x)/(c + d*x))^n])/(d^2*i^2) - ((b*c - a*d)^2*g^2*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]))/(d^3*i^2*(c + d*x)) - (2*b*B*(b*c - a*d)*g^2*n*Log[c + d*
x])/(d^3*i^2) + (2*b*B*(b*c - a*d)*g^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*
Log[c + d*x])/(d^3*i^2) - (2*b*(b*c - a*d)*g^2*(A + B*Log[e*((a + b*x)/(c +
 d*x))^n])*Log[c + d*x])/(d^3*i^2) - (b*B*(b*c - a*d)*g^2*n*Log[c + d*x]^2)
/(d^3*i^2) + (2*b*B*(b*c - a*d)*g^2*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]
)/(d^3*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(144c+144dx)^2}\,dx = \int \left(\frac{b^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{20736d^2} + \frac{(-bc+ad)^2g^2\left(A+B\log\left(e\left(\frac{a+}{c+}\right.\right.\right.}{20736d^2(c+dx)^2}\right.$$

$$= \frac{\left(b^2g^2\right)\int\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx}{20736d^2} - \frac{\left(b(bc-ad)g^2\right)\int\frac{A+B\log\left(e\left(\frac{a+}{c+}\right.\right.}{c+dx}}{10368d^2}$$

$$= \frac{Ab^2g^2x}{20736d^2} - \frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{20736d^3(c+dx)} - \frac{b(bc-ad)g^2\left(A\right.}{}$$

$$= \frac{Ab^2g^2x}{20736d^2} + \frac{bBg^2(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{20736d^2} - \frac{(bc-ad)^2g^2\left(A+B\log\right.}{20736d^3(c+d}$$

$$= \frac{Ab^2g^2x}{20736d^2} + \frac{bBg^2(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{20736d^2} - \frac{(bc-ad)^2g^2\left(A+B\log\right.}{20736d^3(c+d}$$

$$= \frac{Ab^2g^2x}{20736d^2} + \frac{B(bc-ad)^2g^2n}{20736d^3(c+dx)} + \frac{bB(bc-ad)g^2n\log(a+bx)}{20736d^3} + \frac{bBg^2(}{}$$

$$= \frac{Ab^2g^2x}{20736d^2} + \frac{B(bc-ad)^2g^2n}{20736d^3(c+dx)} + \frac{bB(bc-ad)g^2n\log(a+bx)}{20736d^3} + \frac{bBg^2(}{}$$

$$= \frac{Ab^2g^2x}{20736d^2} + \frac{B(bc-ad)^2g^2n}{20736d^3(c+dx)} + \frac{bB(bc-ad)g^2n\log(a+bx)}{20736d^3} + \frac{bBg^2(}{}$$

Mathematica [A] time = 0.25, size = 252, normalized size = 0.92

$$g^2\left(-2b(bc-ad)\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) - \frac{(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{c+dx} + bBd(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right) + b\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d
*i*x)^2,x]
```

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

```
+ d*x] - 2*b*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x
] + b*B*(b*c - a*d)*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])
*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(d^3*i^2)
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ab^2g^2x^2 + 2\,Aabg^2x + Aa^2g^2 + \left(Bb^2g^2x^2 + 2\,Babg^2x + Ba^2g^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{d^2i^2x^2 + 2\,cdi^2x + c^2i^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, a
lgorithm="fricas")
```

```
[Out] integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*
a*b*g^2*x + B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n))/(d^2*i^2*x^2 + 2*c*d
*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^2 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)}{\left(dix + ci\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)
```

```
[Out] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)
```

maxima [B] time = 4.92, size = 1273, normalized size = 4.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, a
lgorithm="maxima")
```

```
[Out] B*a^2*g^2*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2)
 - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A*b^2*(c^2/(d^4*i^2*x + c*d^3*i^
2) - x/(d^2*i^2) + 2*c*log(d*x + c)/(d^3*i^2))*g^2 + 2*A*a*b*g^2*(c/(d^3*i^
2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - B*a^2*g^2*log(e*(b*x/(d*x + c)
 + a/(d*x + c))^n)/(d^2*i^2*x + c*d*i^2) - A*a^2*g^2/(d^2*i^2*x + c*d*i^2)
- (2*a^2*b*d^2*g^2*log(e) + 2*(g^2*n + g^2*log(e))*b^3*c^2 - (3*g^2*n + 4*g
^2*log(e))*a*b^2*c*d)*B*log(d*x + c)/(b*c*d^3*i^2 - a*d^4*i^2) + ((b^3*c*d^
2*g^2*log(e) - a*b^2*d^3*g^2*log(e))*B*x^2 + (b^3*c^2*d*g^2*log(e) - a*b^2*
c*d^2*g^2*log(e))*B*x + 2*((b^3*c^2*d*g^2*n - 2*a*b^2*c*d^2*g^2*n + a^2*b*d
^3*g^2*n)*B*x + (b^3*c^3*g^2*n - 2*a*b^2*c^2*d*g^2*n + a^2*b*c*d^2*g^2*n)*B
```

```
)*log(b*x + a)*log(d*x + c) - ((b^3*c^2*d*g^2*n - 2*a*b^2*c*d^2*g^2*n + a^2
*b*d^3*g^2*n)*B*x + (b^3*c^3*g^2*n - 2*a*b^2*c^2*d*g^2*n + a^2*b*c*d^2*g^2*
n)*B)*log(d*x + c)^2 + ((g^2*n - g^2*log(e))*b^3*c^3 - 3*(g^2*n - g^2*log(e
))*a*b^2*c^2*d + 2*(g^2*n - g^2*log(e))*a^2*b*c*d^2)*B + ((b^3*c^2*d*g^2*n
- a*b^2*c*d^2*g^2*n - a^2*b*d^3*g^2*n)*B*x + (b^3*c^3*g^2*n - a*b^2*c^2*d*g
^2*n - a^2*b*c*d^2*g^2*n)*B)*log(b*x + a) + ((b^3*c*d^2*g^2 - a*b^2*d^3*g^2
)*B*x^2 + (b^3*c^2*d*g^2 - a*b^2*c*d^2*g^2)*B*x - (b^3*c^3*g^2 - 3*a*b^2*c^
2*d*g^2 + 2*a^2*b*c*d^2*g^2)*B - 2*((b^3*c^2*d*g^2 - 2*a*b^2*c*d^2*g^2 + a^
2*b*d^3*g^2)*B*x + (b^3*c^3*g^2 - 2*a*b^2*c^2*d*g^2 + a^2*b*c*d^2*g^2)*B)*l
og(d*x + c))*log((b*x + a)^n) - ((b^3*c*d^2*g^2 - a*b^2*d^3*g^2)*B*x^2 + (b
^3*c^2*d*g^2 - a*b^2*c*d^2*g^2)*B*x - (b^3*c^3*g^2 - 3*a*b^2*c^2*d*g^2 + 2*
a^2*b*c*d^2*g^2)*B - 2*((b^3*c^2*d*g^2 - 2*a*b^2*c*d^2*g^2 + a^2*b*d^3*g^2)
*B*x + (b^3*c^3*g^2 - 2*a*b^2*c^2*d*g^2 + a^2*b*c*d^2*g^2)*B)*log(d*x + c))
*log((d*x + c)^n))/(b*c^2*d^3*i^2 - a*c*d^4*i^2 + (b*c*d^4*i^2 - a*d^5*i^2)
*x) - 2*(b^2*c*g^2*n - a*b*d*g^2*n)*(log(b*x + a)*log((b*d*x + a*d)/(b*c -
a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B/(d^3*i^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)^2\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{{\left(c\,i+d\,i\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
2,x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.145 $\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ci+dix)^2}\,dx$

Optimal. Leaf size=168

$$-\frac{bg\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2i^2}-\frac{Ag(a+bx)}{di^2(c+dx)}-\frac{bBgn\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)}{d^2i^2}-\frac{Bg(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{di^2(c+dx)}+\frac{Bgn(\ldots}{di^2(c\ldots}$$

```
[Out] -A*g*(b*x+a)/d/i^2/(d*x+c)+B*g*n*(b*x+a)/d/i^2/(d*x+c)-B*g*(b*x+a)*ln(e*((b
*x+a)/(d*x+c))^n)/d/i^2/(d*x+c)-b*g*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*
d+b*c)/b/(d*x+c))/d^2/i^2-b*B*g*n*polylog(2,d*(b*x+a)/b/(d*x+c))/d^2/i^2
```

Rubi [A] time = 0.39, antiderivative size = 234, normalized size of antiderivative = 1.39, number of steps used = 14, number of rules used = 11, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.268, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{bBgn\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^2i^2}+\frac{bg\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2i^2}+\frac{g(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2i^2(c+dx)}-\frac{Bg\ldots}{d^2\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^2,
x]
```

```
[Out] -((B*(b*c - a*d)*g*n)/(d^2*i^2*(c + d*x))) - (b*B*g*n*Log[a + b*x])/(d^2*i^
2) + ((b*c - a*d)*g*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*i^2*(c + d
*x)) + (b*B*g*n*Log[c + d*x])/(d^2*i^2) - (b*B*g*n*Log[-((d*(a + b*x))/(b*c
 - a*d))]*Log[c + d*x])/(d^2*i^2) + (b*g*(A + B*Log[e*((a + b*x)/(c + d*x))
^n])*Log[c + d*x])/(d^2*i^2) + (b*B*g*n*Log[c + d*x]^2)/(2*d^2*i^2) - (b*B*
g*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(145c+145dx)^2}\,dx = \int \left(\frac{(-bc+ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21025d(c+dx)^2} + \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{21025d(c+dx)}\right.$$

$$= \frac{(bg)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}\,dx}{21025d} - \frac{((bc-ad)g)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^2}\,dx}{21025d}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21025d^2(c+dx)} + \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\mathrm{l}}{21025d^2}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21025d^2(c+dx)} + \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\mathrm{l}}{21025d^2}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21025d^2(c+dx)} + \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\mathrm{l}}{21025d^2}$$

$$= -\frac{B(bc-ad)gn}{21025d^2(c+dx)} - \frac{bBgn\log(a+bx)}{21025d^2} + \frac{(bc-ad)g\left(A+B\log\left(e\right.\right.}{21025d^2(c+dx}$$

$$= -\frac{B(bc-ad)gn}{21025d^2(c+dx)} - \frac{bBgn\log(a+bx)}{21025d^2} + \frac{(bc-ad)g\left(A+B\log\left(e\right.\right.}{21025d^2(c+dx}$$

$$= -\frac{B(bc-ad)gn}{21025d^2(c+dx)} - \frac{bBgn\log(a+bx)}{21025d^2} + \frac{(bc-ad)g\left(A+B\log\left(e\right.\right.}{21025d^2(c+dx}$$

Mathematica [A] time = 0.18, size = 183, normalized size = 1.09

$$\frac{g\left(2b\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+\frac{2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{c+dx}-bBn\left(2\mathrm{Li}_2\left(\frac{b(c+dx)}{bc-ad}\right)+\log(c+dx)\left(2\log\right.\right.\right.}{2d^2i^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i
*x)^2,x]
```

```
[Out] (g*((2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) + 2*b*
(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 2*B*n*((b*c - a*d)/(c
 + d*x) + b*Log[a + b*x] - b*Log[c + d*x]) - b*B*n*((2*Log[(d*(a + b*x))/(-
(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*
c - a*d)])))/(2*d^2*i^2)
```

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{Abgx+Aag+\left(Bbgx+Bag\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{d^2i^2x^2+2\,cdi^2x+c^2i^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, alg
orithm="fricas")
```

```
[Out] integral((A*b*g*x + A*a*g + (B*b*g*x + B*a*g)*log(e*((b*x + a)/(d*x + c))^n
))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(bgx + ag)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right) + A\right)}{(dix + ci)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)
```

```
[Out] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$Bagn\left(\frac{1}{d^2i^2x + cdi^2} + \frac{b\log(bx + a)}{(bcd - ad^2)i^2} - \frac{b\log(dx + c)}{(bcd - ad^2)i^2}\right) - \frac{1}{2}Bbg\left(\frac{2(dnx + cn)\log(bx + a)\log(dx + c) - (dnx + cn)}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, alg
orithm="maxima")
```

```
[Out] B*a*g*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b
*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - 1/2*B*b*g*((2*(d*n*x + c*n)*log(b*x
+ a)*log(d*x + c) - (d*n*x + c*n)*log(d*x + c)^2 - 2*((d*x + c)*log(d*x + c
) + c)*log((b*x + a)^n) + 2*((d*x + c)*log(d*x + c) + c)*log((d*x + c)^n))/
(d^3*i^2*x + c*d^2*i^2) - 2*integrate((b*d^2*x^2*log(e) + a*d^2*x*log(e) -
b*c^2*n + a*c*d*n + (b*d^2*n*x^2 + a*c*d*n + (b*c*d*n + a*d^2*n)*x)*log(b*x
 + a))/(b*d^4*i^2*x^3 + a*c^2*d^2*i^2 + (2*b*c*d^3*i^2 + a*d^4*i^2)*x^2 + (
b*c^2*d^2*i^2 + 2*a*c*d^3*i^2)*x), x)) + A*b*g*(c/(d^3*i^2*x + c*d^2*i^2) +
 log(d*x + c)/(d^2*i^2)) - B*a*g*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^
2*i^2*x + c*d*i^2) - A*a*g/(d^2*i^2*x + c*d*i^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a\,g + b\,g\,x)\left(A + B\,\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^{n}\right)\right)}{(c\,i + d\,i\,x)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^2,
x)
```

```
[Out] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^2,
 x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.146 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ci+dix)^2}\,dx$

Optimal. Leaf size=102

$$\frac{A(a+bx)}{i^2(c+dx)(bc-ad)}+\frac{B(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{i^2(c+dx)(bc-ad)}-\frac{Bn(a+bx)}{i^2(c+dx)(bc-ad)}$$

```
[Out] A*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)-B*n*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)+B*(b*x+
a)*ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)/i^2/(d*x+c)
```

Rubi [A] time = 0.08, antiderivative size = 107, normalized size of antiderivative = 1.05, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2525, 12, 44}

$$-\frac{B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A}{di^2(c+dx)}+\frac{bBn\log(a+bx)}{di^2(bc-ad)}-\frac{bBn\log(c+dx)}{di^2(bc-ad)}+\frac{Bn}{di^2(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x)^2,x]
```

```
[Out] (B*n)/(d*i^2*(c + d*x)) + (b*B*n*Log[a + b*x])/(d*(b*c - a*d)*i^2) - (A + B
*Log[e*((a + b*x)/(c + d*x))^n])/(d*i^2*(c + d*x)) - (b*B*n*Log[c + d*x])/(
d*(b*c - a*d)*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(146c+146dx)^2}\,dx = -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21316d(c+dx)} + \frac{(Bn)\int \frac{bc-ad}{146(a+bx)(c+dx)^2}\,dx}{146d}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21316d(c+dx)} + \frac{(B(bc-ad)n)\int \frac{1}{(a+bx)(c+dx)^2}\,dx}{21316d}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21316d(c+dx)} + \frac{(B(bc-ad)n)\int \left(\frac{b^2}{(bc-ad)^2(a+bx)} - \frac{d}{(bc-ad)(c+dx)^2} - \frac{b}{(bc-ad)\ldots}\right.}{21316d}$$

$$= \frac{Bn}{21316d(c+dx)} + \frac{bBn\log(a+bx)}{21316d(bc-ad)} - \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21316d(c+dx)} - \frac{bBn\log(c+dx)}{21316d(bc-ad)}$$

Mathematica [A] time = 0.06, size = 114, normalized size = 1.12

$$\frac{Bn(bc-ad)\left(\frac{1}{(c+dx)(bc-ad)} + \frac{b\log(a+bx)}{(bc-ad)^2} - \frac{b\log(c+dx)}{(bc-ad)^2}\right)}{di^2} - \frac{B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A}{di(ci+dix)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x)^2,x]
```

```
[Out] -((A + B*Log[e*((a + b*x)/(c + d*x))^n])/(d*i*(c*i + d*i*x))) + (B*(b*c - a
*d)*n*(1/((b*c - a*d)*(c + d*x)) + (b*Log[a + b*x])/(b*c - a*d)^2 - (b*Log[
c + d*x])/(b*c - a*d)^2))/(d*i^2)
```

fricas [A] time = 0.61, size = 105, normalized size = 1.03

$$-\frac{Abc - Aad - (Bbc - Bad)n + (Bbc - Bad)\log(e) - (Bbdnx + Badn)\log\left(\frac{bx+a}{dx+c}\right)}{\left(bcd^2 - ad^3\right)i^2x + \left(bc^2d - acd^2\right)i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="fric
as")
```

```
[Out] -(A*b*c - A*a*d - (B*b*c - B*a*d)*n + (B*b*c - B*a*d)*log(e) - (B*b*d*n*x +
 B*a*d*n)*log((b*x + a)/(d*x + c)))/((b*c*d^2 - a*d^3)*i^2*x + (b*c^2*d - a
*c*d^2)*i^2)
```

giac [A] time = 1.71, size = 84, normalized size = 0.82

$$-\left(\frac{(bx+a)Bn\log\left(\frac{bx+a}{dx+c}\right)}{dx+c} - \frac{(Bn-A-B)(bx+a)}{dx+c}\right)\left(\frac{bc}{(bc-ad)^2} - \frac{ad}{(bc-ad)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="giac
")
```

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

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{(dix+ci)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^2,x)
```

maxima [A] time = 1.30, size = 136, normalized size = 1.33

$$Bn\left(\frac{1}{d^2i^2x+cdi^2}+\frac{b\log(bx+a)}{(bcd-ad^2)i^2}-\frac{b\log(dx+c)}{(bcd-ad^2)i^2}\right)-\frac{B\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^{n}\right)}{d^2i^2x+cdi^2}-\frac{A}{d^2i^2x+cdi^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^2,x, algorithm="maxi
ma")
```

```
[Out] B*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log
(d*x + c)/((b*c*d - a*d^2)*i^2)) - B*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)
/(d^2*i^2*x + c*d*i^2) - A/(d^2*i^2*x + c*d*i^2)
```

mupad [B] time = 4.84, size = 113, normalized size = 1.11

$$-\frac{A-B\,n}{x\,d^2\,i^2+c\,d\,i^2}-\frac{B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)}{d\,\left(c\,i^2+d\,i^2\,x\right)}+\frac{B\,b\,n\,\mathrm{atan}\left(\frac{b\,c\,2\mathrm{i}+b\,d\,x\,2\mathrm{i}}{a\,d-b\,c}+1\mathrm{i}\right)\,2\mathrm{i}}{d\,i^2\,\left(a\,d-b\,c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/(c*i + d*i*x)^2,x)
```

```
[Out] (B*b*n*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*2i)/(d*i^2*(a*d - b*c)) -
 (B*log(e*((a + b*x)/(c + d*x))^n))/(d*(c*i^2 + d*i^2*x)) - (A - B*n)/(d^2*
i^2*x + c*d*i^2)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**2,x)
```

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

3.147 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)(ci+dix)^2}\,dx$

Optimal. Leaf size=166

$$\frac{b\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2Bgi^2n(bc-ad)^2}-\frac{Ad(a+bx)}{gi^2(c+dx)(bc-ad)^2}-\frac{Bd(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{gi^2(c+dx)(bc-ad)^2}+\frac{Bdn(a+bx)}{gi^2(c+dx)(bc-ad)^2}$$

```
[Out] -A*d*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d*x+c)+B*d*n*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d
*x+c)-B*d*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^2/g/i^2/(d*x+c)+1/2*
b*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/B/(-a*d+b*c)^2/g/i^2/n
```

Rubi [C] time = 0.68, antiderivative size = 450, normalized size of antiderivative = 2.71, number of steps used = 22, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 12, 44}

$$\frac{bBn\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{gi^2(bc-ad)^2}+\frac{bBn\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{gi^2(bc-ad)^2}+\frac{b\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{gi^2(bc-ad)^2}+\frac{B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{gi^2(c+dx)(bc$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)*(c*i + d*i*x)^2),
x]
```

```
[Out] -((B*n)/((b*c - a*d)*g*i^2*(c + d*x))) - (b*B*n*Log[a + b*x])/((b*c - a*d)^
2*g*i^2) - (b*B*n*Log[a + b*x]^2)/(2*(b*c - a*d)^2*g*i^2) + (A + B*Log[e*((
a + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i^2*(c + d*x)) + (b*Log[a + b*x]*(A
+ B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g*i^2) + (b*B*n*Log[c +
 d*x])/((b*c - a*d)^2*g*i^2) + (b*B*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log
[c + d*x])/((b*c - a*d)^2*g*i^2) - (b*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
)*Log[c + d*x])/((b*c - a*d)^2*g*i^2) - (b*B*n*Log[c + d*x]^2)/(2*(b*c - a*
d)^2*g*i^2) + (b*B*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a
*d)^2*g*i^2) + (b*B*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d
)^2*g*i^2) + (b*B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g
*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
```

```
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(147c+147dx)^2(ag+bgx)}\,dx = \int \left(\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21609(bc-ad)^2g(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21609(bc-ad)g(c+dx)^2} - \frac{bd\left(A+B\mathrm{l}\right.}{21609(bc-}\right.$$

$$= \frac{b^2\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}dx}{21609(bc-ad)^2g} - \frac{(bd)\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}dx}{21609(bc-ad)^2g} - \frac{d\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^2}}{21609(bc-ad)g}$$

$$= \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21609(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21609(bc-ad)^2g} - \frac{b\left(A\right.}{}$$

$$= \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21609(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21609(bc-ad)^2g} - \frac{b\left(A\right.}{}$$

$$= \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21609(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21609(bc-ad)^2g} - \frac{b\left(A\right.}{}$$

$$= -\frac{Bn}{21609(bc-ad)g(c+dx)} - \frac{bBn\log(a+bx)}{21609(bc-ad)^2g} + \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{21609(bc-ad)g(c+dx)}$$

$$= -\frac{Bn}{21609(bc-ad)g(c+dx)} - \frac{bBn\log(a+bx)}{21609(bc-ad)^2g} - \frac{bBn\log^2(a+bx)}{43218(bc-ad)^2g} + \frac{A}{216}$$

$$= -\frac{Bn}{21609(bc-ad)g(c+dx)} - \frac{bBn\log(a+bx)}{21609(bc-ad)^2g} - \frac{bBn\log^2(a+bx)}{43218(bc-ad)^2g} + \frac{A}{216}$$

Mathematica [C] time = 0.35, size = 304, normalized size = 1.83

$$\frac{2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2b(c+dx)\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-2b(c+dx)\log(c+dx)\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)*(c*i + d*i*
x)^2),x]
```

```
[Out] (2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*b*(c + d*x)*Log[a
 + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*b*(c + d*x)*(A + B*Log[e
*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 2*B*n*(b*c - a*d + b*(c + d*x)*Lo
g[a + b*x] - b*(c + d*x)*Log[c + d*x]) - b*B*n*(c + d*x)*(Log[a + b*x]*(Log
[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/
(-(b*c) + a*d)]) + b*B*n*(c + d*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] -
Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(2*(
b*c - a*d)^2*g*i^2*(c + d*x))
```

fricas [A] time = 0.93, size = 196, normalized size = 1.18

$$\frac{2\,Abc-2\,Aad+(Bbdnx+Bbcn)\log\left(\frac{bx+a}{dx+c}\right)^2-2\,(Bbc-Bad)n+2\left(Bbc-Bad+(Bbdx+Bbc)\log\left(\frac{bx+a}{dx+c}\right)\right)\mathrm{log}}{2\left(\left(b^2c^2d-2\,abcd^2+a^2d^3\right)gi^2x+\left(b^2c^3-2\,abc^2d+a^2cd^2\right)gi^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, alg
orithm="fricas")
```

```
[Out] 1/2*(2*A*b*c - 2*A*a*d + (B*b*d*n*x + B*b*c*n)*log((b*x + a)/(d*x + c))^2 -
 2*(B*b*c - B*a*d)*n + 2*(B*b*c - B*a*d + (B*b*d*x + B*b*c)*log((b*x + a)/(
d*x + c)))*log(e) - 2*(B*a*d*n - A*b*c + (B*b*d*n - A*b*d)*x)*log((b*x + a)
/(d*x + c)))/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*g*i^2*x + (b^2*c^3 - 2*a*
b*c^2*d + a^2*c*d^2)*g*i^2)
```

giac [A] time = 4.50, size = 180, normalized size = 1.08

$$-\frac{1}{2}\left(\frac{Bbn\log\left(\frac{bx+a}{dx+c}\right)^2}{bcg-adg}-\frac{2\,(bx+a)Bdn\log\left(\frac{bx+a}{dx+c}\right)}{\left(bcg-adg\right)(dx+c)}+\frac{2\,(Ab+Bb)\log\left(\frac{bx+a}{dx+c}\right)}{bcg-adg}+\frac{2\,(Bdn-Ad-Bd)(bx+a)}{\left(bcg-adg\right)(dx+c)}\right)\left(\frac{bc}{(bc-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, alg
orithm="giac")
```

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

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{\left(bgx+ag\right)(dix+ci)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i)^2,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i)^2,x)
```

maxima [B] time = 1.43, size = 424, normalized size = 2.55

$$B\left(\frac{1}{\left(bcd-ad^2\right)gi^2x+\left(bc^2-acd\right)gi^2}+\frac{b\log\left(bx+a\right)}{\left(b^2c^2-2\,abcd+a^2d^2\right)gi^2}-\frac{b\log\left(dx+c\right)}{\left(b^2c^2-2\,abcd+a^2d^2\right)gi^2}\right)\log\left(e\left(\frac{bx}{dx+c}+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^2,x, alg
orithm="maxima")
```

```
[Out] B*(1/((b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b
^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d
 + a^2*d^2)*g*i^2))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/2*((b*d*x +
b*c)*log(b*x + a)^2 + (b*d*x + b*c)*log(d*x + c)^2 + 2*b*c - 2*a*d + 2*(b*d
*x + b*c)*log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))*log(d
*x + c))*B*n/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d^2*g*i^2 + (b^2*c^
2*d*g*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2)*x) + A*(1/((b*c*d - a*d^2)*g
*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^
2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2))
```

mupad [B] time = 4.82, size = 241, normalized size = 1.45

$$\frac{B\,n}{g\,i^2\,\left(a\,d-b\,c\right)\,\left(c+d\,x\right)}-\frac{A}{g\,i^2\,\left(a\,d-b\,c\right)\,\left(c+d\,x\right)}-\frac{B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)}{g\,i^2\,\left(a\,d-b\,c\right)\,\left(c+d\,x\right)}+\frac{B\,b\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2}{2\,g\,i^2\,n\,\left(a\,d-b\,c\right)^2}-\frac{A\,b\,\mathrm{atan}\left(\frac{a\,d\,1\mathrm{i}+b}{a}\right.}{g\,i^2\,(a\,d-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)*(c*i + d*i*x)^2),
x)
```

```
[Out] (B*n)/(g*i^2*(a*d - b*c)*(c + d*x)) - A/(g*i^2*(a*d - b*c)*(c + d*x)) - (B*
log(e*((a + b*x)/(c + d*x))^n))/(g*i^2*(a*d - b*c)*(c + d*x)) - (A*b*atan((
a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g*i^2*(a*d - b*c)^2) + (B*b*n
*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g*i^2*(a*d - b*c)^2) +
 (B*b*log(e*((a + b*x)/(c + d*x))^n)^2)/(2*g*i^2*n*(a*d - b*c)^2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.148 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^2(ci+dix)^2}\,dx$

Optimal. Leaf size=273

$$-\frac{b^2(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^2(a+bx)(bc-ad)^3}+\frac{d^2(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^2(c+dx)(bc-ad)^3}-\frac{2bd\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^2(bc-ad)^3}$$

```
[Out] -B*d^2*n*(b*x+a)/(-a*d+b*c)^3/g^2/i^2/(d*x+c)-b^2*B*n*(d*x+c)/(-a*d+b*c)^3/
g^2/i^2/(b*x+a)+d^2*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^
2/i^2/(d*x+c)-b^2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^2/
i^2/(b*x+a)-2*b*d*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((b*x+a)/(d*x+c))/(-a*d
+b*c)^3/g^2/i^2+b*B*d*n*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g^2/i^2
```

Rubi [C] time = 0.83, antiderivative size = 482, normalized size of antiderivative = 1.77, number of steps used = 26, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{2bBdn\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^2i^2(bc-ad)^3}-\frac{2bBdn\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^2i^2(bc-ad)^3}-\frac{2bd\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^2(bc-ad)^3}-\frac{b\left(B\log\left(e\ldots\right.\right.}{g^2i^2(a+\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*i*x)^2
),x]
```

```
[Out] -((b*B*n)/((b*c - a*d)^2*g^2*i^2*(a + b*x))) + (B*d*n)/((b*c - a*d)^2*g^2*i
^2*(c + d*x)) + (b*B*d*n*Log[a + b*x]^2)/((b*c - a*d)^3*g^2*i^2) - (b*(A +
B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g^2*i^2*(a + b*x)) - (d*(
A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g^2*i^2*(c + d*x)) -
(2*b*d*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*
g^2*i^2) - (2*b*B*d*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c
 - a*d)^3*g^2*i^2) + (2*b*d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c +
d*x])/((b*c - a*d)^3*g^2*i^2) + (b*B*d*n*Log[c + d*x]^2)/((b*c - a*d)^3*g^2
*i^2) - (2*b*B*d*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d
)^3*g^2*i^2) - (2*b*B*d*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c -
 a*d)^3*g^2*i^2) - (2*b*B*d*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c
- a*d)^3*g^2*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(148c+148dx)^2(ag+bgx)^2}\,dx = \int \left(\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21904(bc-ad)^2g^2(a+bx)^2} - \frac{b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{10952(bc-ad)^3g^2(a+bx)} + \frac{d^2\left(A+B\right.}{21904(bc-}\right.$$

$$= -\frac{(b^2d)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}dx}{10952(bc-ad)^3g^2} + \frac{(bd^2)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}dx}{10952(bc-ad)^3g^2} + \frac{b^2\int \frac{A+B\log\left(e\left(\frac{a}{c}\right.\right.}{(a+bx)}}{21904(bc-a}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21904(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21904(bc-ad)^2g^2(c+dx)} - \frac{bd\log(a+bx)\left(\right.}{1095}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21904(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21904(bc-ad)^2g^2(c+dx)} - \frac{bd\log(a+bx)\left(\right.}{1095}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21904(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{21904(bc-ad)^2g^2(c+dx)} - \frac{bd\log(a+bx)\left(\right.}{1095}$$

$$= -\frac{bBn}{21904(bc-ad)^2g^2(a+bx)} + \frac{Bdn}{21904(bc-ad)^2g^2(c+dx)} - \frac{b\left(A+B\log\left(e\right.\right.}{21904(bc-ad)}$$

$$= -\frac{bBn}{21904(bc-ad)^2g^2(a+bx)} + \frac{Bdn}{21904(bc-ad)^2g^2(c+dx)} + \frac{bBdn\log^2(a+}{21904(bc-ad)}$$

$$= -\frac{bBn}{21904(bc-ad)^2g^2(a+bx)} + \frac{Bdn}{21904(bc-ad)^2g^2(c+dx)} + \frac{bBdn\log^2(a+}{21904(bc-ad)}$$

Mathematica [C] time = 0.45, size = 342, normalized size = 1.25

$$\frac{-2bd\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) - \frac{b(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{a+bx} + 2bd\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) + }{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*
i*x)^2),x]
```

```
[Out] (-((b^2*B*c*n)/(a + b*x)) + (a*b*B*d*n)/(a + b*x) + (b*B*c*d*n)/(c + d*x) -
 (a*B*d^2*n)/(c + d*x) - (b*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]))/(a + b*x) + (d*(-(b*c) + a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/
(c + d*x) - 2*b*d*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*b
*d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + b*B*d*n*(Log[a + b
*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a
+ b*x))/(-(b*c) + a*d)]) - b*B*d*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] -
Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/((b*
c - a*d)^3*g^2*i^2)
```

fricas [A] time = 0.66, size = 450, normalized size = 1.65

$$-\frac{Ab^2c^2 - Aa^2d^2 + \left(Bb^2d^2nx^2 + Babcdn + \left(Bb^2cd + Babd^2\right)nx\right)\log\left(\frac{bx+a}{dx+c}\right)^2 + \left(Bb^2c^2 - 2\,Babcd + Ba^2d^2\right)n + 2\left(\right.}{\left(b^4c^3d - 3\,ab\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, a
lgorithm="fricas")
```

```
[Out] -(A*b^2*c^2 - A*a^2*d^2 + (B*b^2*d^2*n*x^2 + B*a*b*c*d*n + (B*b^2*c*d + B*a
*b*d^2)*n*x)*log((b*x + a)/(d*x + c))^2 + (B*b^2*c^2 - 2*B*a*b*c*d + B*a^2*
d^2)*n + 2*(A*b^2*c*d - A*a*b*d^2)*x + (B*b^2*c^2 - B*a^2*d^2 + 2*(B*b^2*c*
d - B*a*b*d^2)*x + 2*(B*b^2*d^2*x^2 + B*a*b*c*d + (B*b^2*c*d + B*a*b*d^2)*x
)*log((b*x + a)/(d*x + c)))*log(e) + (2*A*b^2*d^2*x^2 + 2*A*a*b*c*d + (B*b^
2*c^2 - B*a^2*d^2)*n + 2*(A*b^2*c*d + A*a*b*d^2 + (B*b^2*c*d - B*a*b*d^2)*n
)*x)*log((b*x + a)/(d*x + c)))/((b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*
d^3 - a^3*b*d^4)*g^2*i^2*x^2 + (b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a
^4*d^4)*g^2*i^2*x + (a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*
d^3)*g^2*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{\left(bgx+ag\right)^{2} \left(dix+ci\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)
```

maxima [B] time = 1.48, size = 862, normalized size = 3.16

$$-B\left(\frac{2\,bdx+bc+ad}{\left(b^{3}c^{2}d-2\,ab^{2}cd^{2}+a^{2}bd^{3}\right)g^{2}i^{2}x^{2}+\left(b^{3}c^{3}-ab^{2}c^{2}d-a^{2}bcd^{2}+a^{3}d^{3}\right)g^{2}i^{2}x+\left(ab^{2}c^{3}-2\,a^{2}bc^{2}d+a^{3}cd^{2}\right)g^{2}i^{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x, a
lgorithm="maxima")
```

```
[Out] -B*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*g^2*i^2*
x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x + (a*b^2*c^
3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*log(b*x + a)/((b^3*c^3 - 3*
a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*d*log(d*x + c)/((b^3*
c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2))*log(e*(b*x/(d*x +
c) + a/(d*x + c))^n) - (b^2*c^2 - 2*a*b*c*d + a^2*d^2 - (b^2*d^2*x^2 + a*b*
c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + a*b*c*d + (b
^2*c*d + a*b*d^2)*x)*log(b*x + a)*log(d*x + c) - (b^2*d^2*x^2 + a*b*c*d + (
b^2*c*d + a*b*d^2)*x)*log(d*x + c)^2)*B*n/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^
3*d*g^2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*
i^2 - 3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2
)*x^2 + (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 -
```

```
a^4*d^4*g^2*i^2)*x) - A*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2
+ a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*
g^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*log(b*
x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*
d*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2
))
```

mupad [B] time = 5.46, size = 432, normalized size = 1.58

$$\frac{B\,b\,d\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2}{g^2\,i^2\,n\,(a\,d-b\,c)^3}-\frac{A\,b\,c}{g^2\,i^2\,(a\,d-b\,c)^2\,(a+b\,x)\,(c+d\,x)}-\frac{A\,a\,d}{g^2\,i^2\,(a\,d-b\,c)^2\,(a+b\,x)\,(c+d\,x)}+\frac{B\,a\,d}{g^2\,i^2\,(a\,d-b\,c)^2\,(a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^2*(c*i + d*i*x)^2
),x)
```

```
[Out] (B*b*d*log(e*((a + b*x)/(c + d*x))^n)^2)/(g^2*i^2*n*(a*d - b*c)^3) - (A*a*d
)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (A*b*c)/(g^2*i^2*(a*d - b*c
)^2*(a + b*x)*(c + d*x)) - (A*b*d*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d -
b*c))*4i)/(g^2*i^2*(a*d - b*c)^3) + (B*a*d*n)/(g^2*i^2*(a*d - b*c)^2*(a + b
*x)*(c + d*x)) - (B*b*c*n)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (2
*A*b*d*x)/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (B*a*d*log(e*((a +
b*x)/(c + d*x))^n))/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) - (B*b*c*lo
g(e*((a + b*x)/(c + d*x))^n))/(g^2*i^2*(a*d - b*c)^2*(a + b*x)*(c + d*x)) -
 (2*B*b*d*x*log(e*((a + b*x)/(c + d*x))^n))/(g^2*i^2*(a*d - b*c)^2*(a + b*x
)*(c + d*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**2/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.149 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^3(ci+dix)^2}\,dx$

Optimal. Leaf size=380

$$-\frac{b^3(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^3i^2(a+bx)^2(bc-ad)^4}+\frac{3b^2d(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^3i^2(a+bx)(bc-ad)^4}-\frac{d^3(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+\right.}{g^3i^2(c+dx)(bc-ad)^4}$$

```
[Out] B*d^3*n*(b*x+a)/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+3*b^2*B*d*n*(d*x+c)/(-a*d+b*c)
^4/g^3/i^2/(b*x+a)-1/4*b^3*B*n*(d*x+c)^2/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2-d^3
*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+3*b^2
*d*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/2
*b^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)
^2+3*b*d^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((b*x+a)/(d*x+c))/(-a*d+b*c)^4
/g^3/i^2-3/2*b*B*d^2*n*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^4/g^3/i^2
```

Rubi [C] time = 1.09, antiderivative size = 656, normalized size of antiderivative = 1.73, number of steps used = 30, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{3bBd^2n\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^3i^2(bc-ad)^4}+\frac{3bBd^2n\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^3i^2(bc-ad)^4}+\frac{3bd^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^3i^2(bc-ad)^4}+\frac{d^2\left(B\right.}{g^3i}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*i*x)^2
),x]
```

```
[Out] -(b*B*n)/(4*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (5*b*B*d*n)/(2*(b*c - a*d)
^3*g^3*i^2*(a + b*x)) - (B*d^2*n)/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (3*b*
B*d^2*n*Log[a + b*x])/(2*(b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*n*Log[a + b*x]
^2)/(2*(b*c - a*d)^4*g^3*i^2) - (b*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/
(2*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (2*b*d*(A + B*Log[e*((a + b*x)/(c +
 d*x))^n]))/((b*c - a*d)^3*g^3*i^2*(a + b*x)) + (d^2*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]))/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (3*b*d^2*Log[a + b*x]
*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4*g^3*i^2) - (3*b*B*d
^2*n*Log[c + d*x])/(2*(b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*n*Log[-((d*(a + b
*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*b*d^2*(A + B*
Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*
b*B*d^2*n*Log[c + d*x]^2)/(2*(b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*n*Log[a +
b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) + (3*b*B*d^2*n
*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^3*i^2) + (3*b*B
*d^2*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
```

```
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(149c+149dx)^2(ag+bgx)^3}\,dx = \int \left(\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc-ad)^2g^3(a+bx)^3} - \frac{2b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d^2}{222\ldots}\right.$$

$$= \frac{\left(3b^2d^2\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}dx}{22201(bc-ad)^4g^3} - \frac{\left(3bd^3\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}dx}{22201(bc-ad)^4g^3} - \frac{\left(2b^2d\right)\int \ldots}{2220\ldots}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{44402(bc-ad)^2g^3(a+bx)^2} + \frac{2bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+\ldots\right.}{22201(bc\ldots}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{44402(bc-ad)^2g^3(a+bx)^2} + \frac{2bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+\ldots\right.}{22201(bc\ldots}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{44402(bc-ad)^2g^3(a+bx)^2} + \frac{2bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22201(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+\ldots\right.}{22201(bc\ldots}$$

$$= -\frac{bBn}{88804(bc-ad)^2g^3(a+bx)^2} + \frac{5bBdn}{44402(bc-ad)^3g^3(a+bx)} - \frac{\ldots}{22201(bc-\ldots}$$

$$= -\frac{bBn}{88804(bc-ad)^2g^3(a+bx)^2} + \frac{5bBdn}{44402(bc-ad)^3g^3(a+bx)} - \frac{\ldots}{22201(bc-\ldots}$$

$$= -\frac{bBn}{88804(bc-ad)^2g^3(a+bx)^2} + \frac{5bBdn}{44402(bc-ad)^3g^3(a+bx)} - \frac{\ldots}{22201(bc-\ldots}$$

Mathematica [C] time = 0.76, size = 478, normalized size = 1.26

$$\frac{12bd^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) + \frac{4d^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{c+dx} - 12bd^2\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\ldots\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*
i*x)^2),x]
```

```
[Out] (-((b*B*(b*c - a*d)^2*n)/(a + b*x)^2) + (8*b^2*B*c*d*n)/(a + b*x) - (8*a*b*
B*d^2*n)/(a + b*x) + (2*b*B*d*(b*c - a*d)*n)/(a + b*x) - (4*b*B*c*d^2*n)/(c
 + d*x) + (4*a*B*d^3*n)/(c + d*x) + 6*b*B*d^2*n*Log[a + b*x] - (2*b*(b*c -
a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^2 + (8*b*d*(b*c -
a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) + (4*d^2*(b*c - a*d)
*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) + 12*b*d^2*Log[a + b*x]*
(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*b*B*d^2*n*Log[c + d*x] - 12*b*d^
2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 6*b*B*d^2*n*(Log[a
+ b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*
(a + b*x))/(-(b*c) + a*d)]) + 6*b*B*d^2*n*((2*Log[(d*(a + b*x))/(-(b*c) + a
```

```
*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]
))/(4*(b*c - a*d)^4*g^3*i^2)
```

fricas [B] time = 0.66, size = 946, normalized size = 2.49

$$-\frac{2\,Ab^3c^3 - 12\,Aab^2c^2d + 6\,Aa^2bcd^2 + 4\,Aa^3d^3 - 6\left(2\,Ab^3cd^2 - 2\,Aab^2d^3 + \left(Bb^3cd^2 - Bab^2d^3\right)n\right)x^2 - 6\left(Bb^3d^3nx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, a
lgorithm="fricas")
```

```
[Out] -1/4*(2*A*b^3*c^3 - 12*A*a*b^2*c^2*d + 6*A*a^2*b*c*d^2 + 4*A*a^3*d^3 - 6*(2
*A*b^3*c*d^2 - 2*A*a*b^2*d^3 + (B*b^3*c*d^2 - B*a*b^2*d^3)*n)*x^2 - 6*(B*b^
3*d^3*n*x^3 + B*a^2*b*c*d^2*n + (B*b^3*c*d^2 + 2*B*a*b^2*d^3)*n*x^2 + (2*B*
a*b^2*c*d^2 + B*a^2*b*d^3)*n*x)*log((b*x + a)/(d*x + c))^2 + (B*b^3*c^3 - 1
2*B*a*b^2*c^2*d + 15*B*a^2*b*c*d^2 - 4*B*a^3*d^3)*n - 3*(2*A*b^3*c^2*d + 4*
A*a*b^2*c*d^2 - 6*A*a^2*b*d^3 + (3*B*b^3*c^2*d - 2*B*a*b^2*c*d^2 - B*a^2*b*
d^3)*n)*x + 2*(B*b^3*c^3 - 6*B*a*b^2*c^2*d + 3*B*a^2*b*c*d^2 + 2*B*a^3*d^3
- 6*(B*b^3*c*d^2 - B*a*b^2*d^3)*x^2 - 3*(B*b^3*c^2*d + 2*B*a*b^2*c*d^2 - 3*
B*a^2*b*d^3)*x - 6*(B*b^3*d^3*x^3 + B*a^2*b*c*d^2 + (B*b^3*c*d^2 + 2*B*a*b^
2*d^3)*x^2 + (2*B*a*b^2*c*d^2 + B*a^2*b*d^3)*x)*log((b*x + a)/(d*x + c)))*l
og(e) - 2*(6*A*a^2*b*c*d^2 + 3*(B*b^3*d^3*n + 2*A*b^3*d^3)*x^3 + 3*(3*B*b^3
*c*d^2*n + 2*A*b^3*c*d^2 + 4*A*a*b^2*d^3)*x^2 - (B*b^3*c^3 - 6*B*a*b^2*c^2*
d + 2*B*a^3*d^3)*n + 3*(4*A*a*b^2*c*d^2 + 2*A*a^2*b*d^3 + (B*b^3*c^2*d + 4*
B*a*b^2*c*d^2 - 2*B*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c)))/((b^6*c^4*d
- 4*a*b^5*c^3*d^2 + 6*a^2*b^4*c^2*d^3 - 4*a^3*b^3*c*d^4 + a^4*b^2*d^5)*g^3*
i^2*x^3 + (b^6*c^5 - 2*a*b^5*c^4*d - 2*a^2*b^4*c^3*d^2 + 8*a^3*b^3*c^2*d^3
- 7*a^4*b^2*c*d^4 + 2*a^5*b*d^5)*g^3*i^2*x^2 + (2*a*b^5*c^5 - 7*a^2*b^4*c^4
*d + 8*a^3*b^3*c^3*d^2 - 2*a^4*b^2*c^2*d^3 - 2*a^5*b*c*d^4 + a^6*d^5)*g^3*i
^2*x + (a^2*b^4*c^5 - 4*a^3*b^3*c^4*d + 6*a^4*b^2*c^3*d^2 - 4*a^5*b*c^2*d^3
 + a^6*c*d^4)*g^3*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{\left(bgx+ag\right)^{3}\left(dix+ci\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)
```

maxima [B] time = 2.40, size = 1724, normalized size = 4.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x, a
lgorithm="maxima")
```

```
[Out] 1/2*B*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*
b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^
3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 -
2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d
^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*
a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x + a)/((b^4*c^4 - 4*a*
b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2
*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3
 + a^4*d^4)*g^3*i^2))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/4*(b^3*c^3
 - 12*a*b^2*c^2*d + 15*a^2*b*c*d^2 - 4*a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*
x^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b
^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b
^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(d*x + c)^2
 - 3*(3*b^3*c^2*d - 2*a*b^2*c*d^2 - a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a^2*b*c
*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b
*x + a) + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2
*a*b^2*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2
*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a))*log(d*x + c)
)*B*n/(a^2*b^4*c^5*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 + 6*a^4*b^2*c^3*d^2*g^
3*i^2 - 4*a^5*b*c^2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (b^6*c^4*d*g^3*i^2 -
4*a*b^5*c^3*d^2*g^3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4*a^3*b^3*c*d^4*g^3*i
^2 + a^4*b^2*d^5*g^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*b^5*c^4*d*g^3*i^2 -
2*a^2*b^4*c^3*d^2*g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 - 7*a^4*b^2*c*d^4*g^3
*i^2 + 2*a^5*b*d^5*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2 - 7*a^2*b^4*c^4*d*g^
3*i^2 + 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g^3*i^2 - 2*a^5*b*c*d
^4*g^3*i^2 + a^6*d^5*g^3*i^2)*x) + 1/2*A*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*
c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2
+ 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a
^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4
- 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x +
(a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*
b*d^2*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*
c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d
+ 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2))
```

mupad [B] time = 7.38, size = 1016, normalized size = 2.67

$$\frac{3\,B\,b\,d^2\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2}{2\,g^3\,i^2\,n\,(a\,d-b\,c)^4}-\frac{\frac{4\,A\,a^2\,d^2-2\,A\,b^2\,c^2-4\,B\,a^2\,d^2\,n-B\,b^2\,c^2\,n+10\,A\,a\,b\,c}{2\,(a\,d-b\,c)}}{x\,\left(2\,a^4\,d^3\,g^3\,i^2-6\,a^2\,b^2\,c^2\,d\,g^3\,i^2+4\,a\,b^3\,c^3\,g^3\,i^2\right)+x^2\,\left(4\,a^3\,b\,d^3\,g^3\,i^2-6\,a^2\,b^2\,c\,d^2\,g^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^3*(c*i + d*i*x)^2
),x)
```

```
[Out] (3*B*b*d^2*log(e*((a + b*x)/(c + d*x))^n)^2)/(2*g^3*i^2*n*(a*d - b*c)^4) -
((4*A*a^2*d^2 - 2*A*b^2*c^2 - 4*B*a^2*d^2*n - B*b^2*c^2*n + 10*A*a*b*c*d +
11*B*a*b*c*d*n)/(2*(a*d - b*c)) + (3*x^2*(2*A*b^2*d^2 + B*b^2*d^2*n))/(a*d
- b*c) + (3*x*(6*A*a*b*d^2 + 2*A*b^2*c*d + B*a*b*d^2*n + 3*B*b^2*c*d*n))/(2
*(a*d - b*c)))/(x*(2*a^4*d^3*g^3*i^2 + 4*a*b^3*c^3*g^3*i^2 - 6*a^2*b^2*c^2*
d*g^3*i^2) + x^2*(2*b^4*c^3*g^3*i^2 + 4*a^3*b*d^3*g^3*i^2 - 6*a^2*b^2*c*d^2
*g^3*i^2) + x^3*(2*a^2*b^2*d^3*g^3*i^2 + 2*b^4*c^2*d*g^3*i^2 - 4*a*b^3*c*d^
2*g^3*i^2) + 2*a^2*b^2*c^3*g^3*i^2 + 2*a^4*c*d^2*g^3*i^2 - 4*a^3*b*c^2*d*g^
```

```
3*i^2) - (b*d^2*atan((b*d^2*(2*A + B*n)*((a^4*d^4*g^3*i^2 - b^4*c^4*g^3*i^2
 + 2*a*b^3*c^3*d*g^3*i^2 - 2*a^3*b*c*d^3*g^3*i^2)/(a^3*d^3*g^3*i^2 - b^3*c^
3*g^3*i^2 + 3*a*b^2*c^2*d*g^3*i^2 - 3*a^2*b*c*d^2*g^3*i^2) + 2*b*d*x)*(a^3*
d^3*g^3*i^2 - b^3*c^3*g^3*i^2 + 3*a*b^2*c^2*d*g^3*i^2 - 3*a^2*b*c*d^2*g^3*i
^2)*3i)/(g^3*i^2*(6*A*b*d^2 + 3*B*b*d^2*n)*(a*d - b*c)^4))*(2*A + B*n)*3i)/
(g^3*i^2*(a*d - b*c)^4) - log(e*((a + b*x)/(c + d*x))^n)*(((B*(2*a*d + b*c)
)/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (3*B*b*d*x)/(2*(a^2*d^2 + b^2*c^2 -
 2*a*b*c*d)))/(x*(a^2*d*g^3*i^2 + 2*a*b*c*g^3*i^2) + x^2*(b^2*c*g^3*i^2 + 2
*a*b*d*g^3*i^2) + a^2*c*g^3*i^2 + b^2*d*g^3*i^2*x^3) + (3*B*b*d^2*(b*g^3*i^
2*n*x^2*(a*d - b*c) + (a*c*g^3*i^2*n*(a*d - b*c))/d + (g^3*i^2*n*x*(a*d + b
*c)*(a*d - b*c))/d))/(g^3*i^2*n*(a*d - b*c)^4*(x*(a^2*d*g^3*i^2 + 2*a*b*c*g
^3*i^2) + x^2*(b^2*c*g^3*i^2 + 2*a*b*d*g^3*i^2) + a^2*c*g^3*i^2 + b^2*d*g^3
*i^2*x^3)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**3/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.150 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^4(ci+dix)^2}\,dx$

Optimal. Leaf size=477

$$-\frac{b^4(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3g^4i^2(a+bx)^3(bc-ad)^5}+\frac{2b^3d(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^4i^2(a+bx)^2(bc-ad)^5}-\frac{6b^2d^2(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{g^4i^2(a+bx)(bc-ad)^5}$$

```
[Out] -B*d^4*n*(b*x+a)/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-6*b^2*B*d^2*n*(d*x+c)/(-a*d+b
*c)^5/g^4/i^2/(b*x+a)+b^3*B*d*n*(d*x+c)^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-1/
9*b^4*B*n*(d*x+c)^3/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3+d^4*(b*x+a)*(A+B*ln(e*((
b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-6*b^2*d^2*(d*x+c)*(A+B*ln(
e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)+2*b^3*d*(d*x+c)^2*(A+B
*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-1/3*b^4*(d*x+c)^
3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3-4*b*d^3*(A
+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((b*x+a)/(d*x+c))/(-a*d+b*c)^5/g^4/i^2+2*b*
B*d^3*n*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^5/g^4/i^2
```

Rubi [C] time = 1.36, antiderivative size = 735, normalized size of antiderivative = 1.54, number of steps used = 34, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{4bBd^3n\,\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^4i^2(bc-ad)^5}-\frac{4bBd^3n\,\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^4i^2(bc-ad)^5}-\frac{4bd^3\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^4i^2(bc-ad)^5}-\frac{d^3\left(\right.}{g^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*i*x)^2
),x]
```

```
[Out] -(b*B*n)/(9*(b*c - a*d)^2*g^4*i^2*(a + b*x)^3) + (2*b*B*d*n)/(3*(b*c - a*d)
^3*g^4*i^2*(a + b*x)^2) - (13*b*B*d^2*n)/(3*(b*c - a*d)^4*g^4*i^2*(a + b*x)
) + (B*d^3*n)/((b*c - a*d)^4*g^4*i^2*(c + d*x)) - (10*b*B*d^3*n*Log[a + b*x
])/(3*(b*c - a*d)^5*g^4*i^2) + (2*b*B*d^3*n*Log[a + b*x]^2)/((b*c - a*d)^5*
g^4*i^2) - (b*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*(b*c - a*d)^2*g^4*
i^2*(a + b*x)^3) + (b*d*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d
)^3*g^4*i^2*(a + b*x)^2) - (3*b*d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))
/((b*c - a*d)^4*g^4*i^2*(a + b*x)) - (d^3*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n]))/((b*c - a*d)^4*g^4*i^2*(c + d*x)) - (4*b*d^3*Log[a + b*x]*(A + B*Log
[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^5*g^4*i^2) + (10*b*B*d^3*n*Log[c
 + d*x])/(3*(b*c - a*d)^5*g^4*i^2) - (4*b*B*d^3*n*Log[-((d*(a + b*x))/(b*c
- a*d))]*Log[c + d*x])/((b*c - a*d)^5*g^4*i^2) + (4*b*d^3*(A + B*Log[e*((a
+ b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^5*g^4*i^2) + (2*b*B*d^3*n*
Log[c + d*x]^2)/((b*c - a*d)^5*g^4*i^2) - (4*b*B*d^3*n*Log[a + b*x]*Log[(b*
(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^4*i^2) - (4*b*B*d^3*n*PolyLog[2,
-((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^5*g^4*i^2) - (4*b*B*d^3*n*PolyL
og[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^4*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
```

```
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(150c+150dx)^2(ag+bgx)^4}\,dx=\int\left(\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22500(bc-ad)^2g^4(a+bx)^4}-\frac{b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{11250(bc-ad)^3g^4(a+bx)^3}+\frac{b^2d^2\left(\cdots\right.}{7500(\cdots}\right.$$

$$=-\frac{\left(b^2d^3\right)\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}\,dx}{5625(bc-ad)^5g^4}+\frac{\left(bd^4\right)\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}\,dx}{5625(bc-ad)^5g^4}+\frac{\left(b^2d^2\right)\int\cdots}{7500(\cdots}$$

$$=-\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{67500(bc-ad)^2g^4(a+bx)^3}+\frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22500(bc-ad)^3g^4(a+bx)^2}-\frac{bd^2\left(A+\cdots\right.}{7500(bc\cdots}$$

$$=-\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{67500(bc-ad)^2g^4(a+bx)^3}+\frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22500(bc-ad)^3g^4(a+bx)^2}-\frac{bd^2\left(A+\cdots\right.}{7500(bc\cdots}$$

$$=-\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{67500(bc-ad)^2g^4(a+bx)^3}+\frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{22500(bc-ad)^3g^4(a+bx)^2}-\frac{bd^2\left(A+\cdots\right.}{7500(bc\cdots}$$

$$=-\frac{bBn}{202500(bc-ad)^2g^4(a+bx)^3}+\frac{bBdn}{33750(bc-ad)^3g^4(a+bx)^2}-\frac{\cdots}{67500(b\cdots}$$

$$=-\frac{bBn}{202500(bc-ad)^2g^4(a+bx)^3}+\frac{bBdn}{33750(bc-ad)^3g^4(a+bx)^2}-\frac{\cdots}{67500(b\cdots}$$

$$=-\frac{bBn}{202500(bc-ad)^2g^4(a+bx)^3}+\frac{bBdn}{33750(bc-ad)^3g^4(a+bx)^2}-\frac{\cdots}{67500(b\cdots}$$

Mathematica [C] time = 1.54, size = 549, normalized size = 1.15

$$-\frac{36bd^3\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-\frac{9d^3(ad-bc)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{c+dx}-36bd^3\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\cdots\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*
i*x)^2),x]
```

```
[Out] -1/9*((b*B*(b*c - a*d)^3*n)/(a + b*x)^3 - (6*b*B*d*(b*c - a*d)^2*n)/(a + b*
x)^2 + (27*b^2*B*c*d^2*n)/(a + b*x) - (27*a*b*B*d^3*n)/(a + b*x) + (12*b*B*
d^2*(b*c - a*d)*n)/(a + b*x) - (9*b*B*c*d^3*n)/(c + d*x) + (9*a*B*d^4*n)/(c
 + d*x) + 30*b*B*d^3*n*Log[a + b*x] + (3*b*(b*c - a*d)^3*(A + B*Log[e*((a +
 b*x)/(c + d*x))^n]))/(a + b*x)^3 - (9*b*d*(b*c - a*d)^2*(A + B*Log[e*((a +
 b*x)/(c + d*x))^n]))/(a + b*x)^2 + (27*b*d^2*(b*c - a*d)*(A + B*Log[e*((a
+ b*x)/(c + d*x))^n]))/(a + b*x) - (9*d^3*(-(b*c) + a*d)*(A + B*Log[e*((a +
```

```
b*x)/(c + d*x))^n]))/(c + d*x) + 36*b*d^3*Log[a + b*x]*(A + B*Log[e*((a +
b*x)/(c + d*x))^n]) - 30*b*B*d^3*n*Log[c + d*x] - 36*b*d^3*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n])*Log[c + d*x] - 18*b*B*d^3*n*(Log[a + b*x]*(Log[a + b
*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c
) + a*d)]) + 18*b*B*d^3*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d
*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^
5*g^4*i^2)
```

fricas [B] time = 1.01, size = 1458, normalized size = 3.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, a
lgorithm="fricas")
```

```
[Out] -1/9*(3*A*b^4*c^4 - 18*A*a*b^3*c^3*d + 54*A*a^2*b^2*c^2*d^2 - 30*A*a^3*b*c*
d^3 - 9*A*a^4*d^4 + 6*(6*A*b^4*c*d^3 - 6*A*a*b^3*d^4 + 5*(B*b^4*c*d^3 - B*a
*b^3*d^4)*n)*x^3 + 3*(6*A*b^4*c^2*d^2 + 24*A*a*b^3*c*d^3 - 30*A*a^2*b^2*d^4
 + (11*B*b^4*c^2*d^2 + 8*B*a*b^3*c*d^3 - 19*B*a^2*b^2*d^4)*n)*x^2 + 18*(B*b
^4*d^4*n*x^4 + B*a^3*b*c*d^3*n + (B*b^4*c*d^3 + 3*B*a*b^3*d^4)*n*x^3 + 3*(B
*a*b^3*c*d^3 + B*a^2*b^2*d^4)*n*x^2 + (3*B*a^2*b^2*c*d^3 + B*a^3*b*d^4)*n*x
)*log((b*x + a)/(d*x + c))^2 + (B*b^4*c^4 - 9*B*a*b^3*c^3*d + 54*B*a^2*b^2*
c^2*d^2 - 55*B*a^3*b*c*d^3 + 9*B*a^4*d^4)*n - (6*A*b^4*c^3*d - 54*A*a*b^3*c
^2*d^2 - 18*A*a^2*b^2*c*d^3 + 66*A*a^3*b*d^4 + (5*B*b^4*c^3*d - 81*B*a*b^3*
c^2*d^2 + 57*B*a^2*b^2*c*d^3 + 19*B*a^3*b*d^4)*n)*x + 3*(B*b^4*c^4 - 6*B*a*
b^3*c^3*d + 18*B*a^2*b^2*c^2*d^2 - 10*B*a^3*b*c*d^3 - 3*B*a^4*d^4 + 12*(B*b
^4*c*d^3 - B*a*b^3*d^4)*x^3 + 6*(B*b^4*c^2*d^2 + 4*B*a*b^3*c*d^3 - 5*B*a^2*
b^2*d^4)*x^2 - 2*(B*b^4*c^3*d - 9*B*a*b^3*c^2*d^2 - 3*B*a^2*b^2*c*d^3 + 11*
B*a^3*b*d^4)*x + 12*(B*b^4*d^4*x^4 + B*a^3*b*c*d^3 + (B*b^4*c*d^3 + 3*B*a*b
^3*d^4)*x^3 + 3*(B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*x^2 + (3*B*a^2*b^2*c*d^3 +
B*a^3*b*d^4)*x)*log((b*x + a)/(d*x + c)))*log(e) + 3*(12*A*a^3*b*c*d^3 + 2*
(5*B*b^4*d^4*n + 6*A*b^4*d^4)*x^4 + 2*(6*A*b^4*c*d^3 + 18*A*a*b^3*d^4 + (11
*B*b^4*c*d^3 + 9*B*a*b^3*d^4)*n)*x^3 + 6*(6*A*a*b^3*c*d^3 + 6*A*a^2*b^2*d^4
 + (B*b^4*c^2*d^2 + 9*B*a*b^3*c*d^3)*n)*x^2 + (B*b^4*c^4 - 6*B*a*b^3*c^3*d
+ 18*B*a^2*b^2*c^2*d^2 - 3*B*a^4*d^4)*n + 2*(18*A*a^2*b^2*c*d^3 + 6*A*a^3*b
*d^4 - (B*b^4*c^3*d - 9*B*a*b^3*c^2*d^2 - 18*B*a^2*b^2*c*d^3 + 6*B*a^3*b*d^
4)*n)*x)*log((b*x + a)/(d*x + c)))/((b^8*c^5*d - 5*a*b^7*c^4*d^2 + 10*a^2*b
^6*c^3*d^3 - 10*a^3*b^5*c^2*d^4 + 5*a^4*b^4*c*d^5 - a^5*b^3*d^6)*g^4*i^2*x^
4 + (b^8*c^6 - 2*a*b^7*c^5*d - 5*a^2*b^6*c^4*d^2 + 20*a^3*b^5*c^3*d^3 - 25*
a^4*b^4*c^2*d^4 + 14*a^5*b^3*c*d^5 - 3*a^6*b^2*d^6)*g^4*i^2*x^3 + 3*(a*b^7*
c^6 - 4*a^2*b^6*c^5*d + 5*a^3*b^5*c^4*d^2 - 5*a^5*b^3*c^2*d^4 + 4*a^6*b^2*c
*d^5 - a^7*b*d^6)*g^4*i^2*x^2 + (3*a^2*b^6*c^6 - 14*a^3*b^5*c^5*d + 25*a^4*
b^4*c^4*d^2 - 20*a^5*b^3*c^3*d^3 + 5*a^6*b^2*c^2*d^4 + 2*a^7*b*c*d^5 - a^8*
d^6)*g^4*i^2*x + (a^3*b^5*c^6 - 5*a^4*b^4*c^5*d + 10*a^5*b^3*c^4*d^2 - 10*a
^6*b^2*c^3*d^3 + 5*a^7*b*c^2*d^4 - a^8*c*d^5)*g^4*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{\left(bgx+ag\right)^{4}\left(dix+ci\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)
```

maxima [B] time = 3.46, size = 2563, normalized size = 5.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x, a
lgorithm="maxima")
```

```
[Out] -1/3*B*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c*d^2 + 3*a^3*
d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2*c*d^2 - 11*a
^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4*a^3*b^4*
c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2*b^5*c^3*d
^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^4*i^2*x^3 + 3
*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*c^2*d^3 - 3*a
^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^3*b^4*c^4*d +
 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^5)*g^4*i^2*x
+ (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2*d^3 + a^
7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^
2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2) - 12
*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3
*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2))*log(e*(b*x/(d*x + c) + a/
(d*x + c))^n) - 1/9*(b^4*c^4 - 9*a*b^3*c^3*d + 54*a^2*b^2*c^2*d^2 - 55*a^3*
b*c*d^3 + 9*a^4*d^4 + 30*(b^4*c*d^3 - a*b^3*d^4)*x^3 + 3*(11*b^4*c^2*d^2 +
8*a*b^3*c*d^3 - 19*a^2*b^2*d^4)*x^2 - 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*
c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c
*d^3 + a^3*b*d^4)*x)*log(b*x + a)^2 - 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*
c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c
*d^3 + a^3*b*d^4)*x)*log(d*x + c)^2 - (5*b^4*c^3*d - 81*a*b^3*c^2*d^2 + 57*
a^2*b^2*c*d^3 + 19*a^3*b*d^4)*x + 30*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^
3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3
 + a^3*b*d^4)*x)*log(b*x + a) - 6*(5*b^4*d^4*x^4 + 5*a^3*b*c*d^3 + 5*(b^4*c
*d^3 + 3*a*b^3*d^4)*x^3 + 15*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 5*(3*a^2*b^2
*c*d^3 + a^3*b*d^4)*x - 6*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3
*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^
4)*x)*log(b*x + a))*log(d*x + c))*B*n/(a^3*b^5*c^6*g^4*i^2 - 5*a^4*b^4*c^5*
d*g^4*i^2 + 10*a^5*b^3*c^4*d^2*g^4*i^2 - 10*a^6*b^2*c^3*d^3*g^4*i^2 + 5*a^7
*b*c^2*d^4*g^4*i^2 - a^8*c*d^5*g^4*i^2 + (b^8*c^5*d*g^4*i^2 - 5*a*b^7*c^4*d
^2*g^4*i^2 + 10*a^2*b^6*c^3*d^3*g^4*i^2 - 10*a^3*b^5*c^2*d^4*g^4*i^2 + 5*a^
4*b^4*c*d^5*g^4*i^2 - a^5*b^3*d^6*g^4*i^2)*x^4 + (b^8*c^6*g^4*i^2 - 2*a*b^7
*c^5*d*g^4*i^2 - 5*a^2*b^6*c^4*d^2*g^4*i^2 + 20*a^3*b^5*c^3*d^3*g^4*i^2 - 2
5*a^4*b^4*c^2*d^4*g^4*i^2 + 14*a^5*b^3*c*d^5*g^4*i^2 - 3*a^6*b^2*d^6*g^4*i^
2)*x^3 + 3*(a*b^7*c^6*g^4*i^2 - 4*a^2*b^6*c^5*d*g^4*i^2 + 5*a^3*b^5*c^4*d^2
*g^4*i^2 - 5*a^5*b^3*c^2*d^4*g^4*i^2 + 4*a^6*b^2*c*d^5*g^4*i^2 - a^7*b*d^6*
g^4*i^2)*x^2 + (3*a^2*b^6*c^6*g^4*i^2 - 14*a^3*b^5*c^5*d*g^4*i^2 + 25*a^4*b
^4*c^4*d^2*g^4*i^2 - 20*a^5*b^3*c^3*d^3*g^4*i^2 + 5*a^6*b^2*c^2*d^4*g^4*i^2
 + 2*a^7*b*c*d^5*g^4*i^2 - a^8*d^6*g^4*i^2)*x) - 1/3*A*((12*b^3*d^3*x^3 + b
^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c*d^2 + 3*a^3*d^3 + 6*(b^3*c*d^2 + 5*a*b^
```

```
2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2*c*d^2 - 11*a^2*b*d^3)*x)/((b^7*c^4*d -
4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4*a^3*b^4*c*d^4 + a^4*b^3*d^5)*g^4*i^
2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2*b^5*c^3*d^2 + 14*a^3*b^4*c^2*d^3 - 1
1*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^4*i^2*x^3 + 3*(a*b^6*c^5 - 3*a^2*b^5*c^4
*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*c^2*d^3 - 3*a^5*b^2*c*d^4 + a^6*b*d^5)*g
^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^3*b^4*c^4*d + 14*a^4*b^3*c^3*d^2 - 6*a^5
*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^5)*g^4*i^2*x + (a^3*b^4*c^5 - 4*a^4*b^3*
c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2*d^3 + a^7*c*d^4)*g^4*i^2) + 12*b*d^
3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*
c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2) - 12*b*d^3*log(d*x + c)/((b^5*c
^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^
4 - a^5*d^5)*g^4*i^2))
```

mupad [B] time = 9.93, size = 1665, normalized size = 3.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^4*(c*i + d*i*x)^2
),x)
```

```
[Out] (2*B*b*d^3*log(e*((a + b*x)/(c + d*x))^n)^2)/(g^4*i^2*n*(a*d - b*c)^3*(a^2*
d^2 + b^2*c^2 - 2*a*b*c*d)) - log(e*((a + b*x)/(c + d*x))^n)*(((B*(3*a*d +
b*c))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (4*B*b*d*x)/(3*(a^2*d^2 + b^2*c
^2 - 2*a*b*c*d)))/(x^3*(b^3*c*g^4*i^2 + 3*a*b^2*d*g^4*i^2) + x^2*(3*a*b^2*c
*g^4*i^2 + 3*a^2*b*d*g^4*i^2) + x*(a^3*d*g^4*i^2 + 3*a^2*b*c*g^4*i^2) + a^3
*c*g^4*i^2 + b^3*d*g^4*i^2*x^4) + (4*B*b*d^3*(x*((a*d + b*c)*((a*g^4*i^2*n*
(a*d - b*c))/(2*d) + (g^4*i^2*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2)) + (a*b*
c*g^4*i^2*n*(a*d - b*c))/d) + x^2*(b*d*((a*g^4*i^2*n*(a*d - b*c))/(2*d) + (
g^4*i^2*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2)) + (b*g^4*i^2*n*(a*d + b*c)*(a
*d - b*c))/d) + a*c*((a*g^4*i^2*n*(a*d - b*c))/(2*d) + (g^4*i^2*n*(a*d - b*
c)*(2*a*d - b*c))/(2*d^2)) + b^2*g^4*i^2*n*x^3*(a*d - b*c)))/(g^4*i^2*n*(a*
d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(x^3*(b^3*c*g^4*i^2 + 3*a*b^2*d*
g^4*i^2) + x^2*(3*a*b^2*c*g^4*i^2 + 3*a^2*b*d*g^4*i^2) + x*(a^3*d*g^4*i^2 +
 3*a^2*b*c*g^4*i^2) + a^3*c*g^4*i^2 + b^3*d*g^4*i^2*x^4))) - (b*d^3*atan((b
*d^3*((a^5*d^5*g^4*i^2 + b^5*c^5*g^4*i^2 - 3*a*b^4*c^4*d*g^4*i^2 - 3*a^4*b*
c*d^4*g^4*i^2 + 2*a^2*b^3*c^3*d^2*g^4*i^2 + 2*a^3*b^2*c^2*d^3*g^4*i^2)/(a^4
*d^4*g^4*i^2 + b^4*c^4*g^4*i^2 - 4*a*b^3*c^3*d*g^4*i^2 - 4*a^3*b*c*d^3*g^4*
i^2 + 6*a^2*b^2*c^2*d^2*g^4*i^2) + 2*b*d*x)*(6*A + 5*B*n)*(a^4*d^4*g^4*i^2
+ b^4*c^4*g^4*i^2 - 4*a*b^3*c^3*d*g^4*i^2 - 4*a^3*b*c*d^3*g^4*i^2 + 6*a^2*b
^2*c^2*d^2*g^4*i^2)*2i)/(g^4*i^2*(12*A*b*d^3 + 10*B*b*d^3*n)*(a*d - b*c)^5)
)*(6*A + 5*B*n)*4i)/(3*g^4*i^2*(a*d - b*c)^5) - ((9*A*a^3*d^3 + 3*A*b^3*c^3
 - 9*B*a^3*d^3*n + B*b^3*c^3*n - 15*A*a*b^2*c^2*d + 39*A*a^2*b*c*d^2 - 8*B*
a*b^2*c^2*d*n + 46*B*a^2*b*c*d^2*n)/(3*(a*d - b*c)) + (2*x^3*(6*A*b^3*d^3 +
 5*B*b^3*d^3*n))/(a*d - b*c) + (x*(66*A*a^2*b*d^3 - 6*A*b^3*c^2*d + 48*A*a*
b^2*c*d^2 + 19*B*a^2*b*d^3*n - 5*B*b^3*c^2*d*n + 76*B*a*b^2*c*d^2*n))/(3*(a
*d - b*c)) + (x^2*(30*A*a*b^2*d^3 + 6*A*b^3*c*d^2 + 19*B*a*b^2*d^3*n + 11*B
*b^3*c*d^2*n))/(a*d - b*c))/(x*(3*a^6*d^4*g^4*i^2 - 9*a^2*b^4*c^4*g^4*i^2 +
 24*a^3*b^3*c^3*d*g^4*i^2 - 18*a^4*b^2*c^2*d^2*g^4*i^2) - x^2*(9*a*b^5*c^4*
g^4*i^2 - 9*a^5*b*d^4*g^4*i^2 - 18*a^2*b^4*c^3*d*g^4*i^2 + 18*a^4*b^2*c*d^3
*g^4*i^2) - x^3*(3*b^6*c^4*g^4*i^2 - 9*a^4*b^2*d^4*g^4*i^2 + 24*a^3*b^3*c*d
^3*g^4*i^2 - 18*a^2*b^4*c^2*d^2*g^4*i^2) + x^4*(3*a^3*b^3*d^4*g^4*i^2 - 3*b
^6*c^3*d*g^4*i^2 + 9*a*b^5*c^2*d^2*g^4*i^2 - 9*a^2*b^4*c*d^3*g^4*i^2) - 3*a
^3*b^3*c^4*g^4*i^2 + 3*a^6*c*d^3*g^4*i^2 + 9*a^4*b^2*c^3*d*g^4*i^2 - 9*a^5*
b*c^2*d^2*g^4*i^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**4/(d*i*x+c*i)**2,x)
[Out] Timed out
```

3.151 $\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ci+dix)^3}\,dx$

Optimal. Leaf size=382

$$\frac{b^2g^3(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(3B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+3A+Bn\right)}{d^4i^3}+\frac{bg^3(a+bx)(3A+Bn)(bc-ad)}{d^3i^3(c+dx)}+\frac{g^3(a+bx)^2(bc-ad}{}$$

```
[Out] -3/4*B*(-a*d+b*c)*g^3*n*(b*x+a)^2/d^2/i^3/(d*x+c)^2-3*b*B*(-a*d+b*c)*g^3*n*
(b*x+a)/d^3/i^3/(d*x+c)+b*(-a*d+b*c)*g^3*(B*n+3*A)*(b*x+a)/d^3/i^3/(d*x+c)+
3*b*B*(-a*d+b*c)*g^3*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/d^3/i^3/(d*x+c)+g^3*
(b*x+a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d/i^3/(d*x+c)^2+1/2*(-a*d+b*c)*g^
3*(b*x+a)^2*(3*A+B*n+3*B*ln(e*((b*x+a)/(d*x+c))^n))/d^2/i^3/(d*x+c)^2+b^2*(
-a*d+b*c)*g^3*(3*A+B*n+3*B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+
c))/d^4/i^3+3*b^2*B*(-a*d+b*c)*g^3*n*polylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i^3
```

Rubi [A] time = 0.75, antiderivative size = 461, normalized size of antiderivative = 1.21, number of steps used = 21, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.302, Rules used = {2528, 2486, 31, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{3b^2Bg^3n(bc-ad)\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^4i^3}-\frac{3b^2g^3(bc-ad)\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^4i^3}-\frac{3bg^3(bc-ad)^2\left(B\log\right.}{d^4i^3(c}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^
3,x]
```

```
[Out] (A*b^3*g^3*x)/(d^3*i^3) - (B*(b*c - a*d)^3*g^3*n)/(4*d^4*i^3*(c + d*x)^2) +
 (5*b*B*(b*c - a*d)^2*g^3*n)/(2*d^4*i^3*(c + d*x)) + (5*b^2*B*(b*c - a*d)*g
^3*n*Log[a + b*x])/(2*d^4*i^3) + (b^2*B*g^3*(a + b*x)*Log[e*((a + b*x)/(c +
 d*x))^n])/(d^3*i^3) + ((b*c - a*d)^3*g^3*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n]))/(2*d^4*i^3*(c + d*x)^2) - (3*b*(b*c - a*d)^2*g^3*(A + B*Log[e*((a +
b*x)/(c + d*x))^n]))/(d^4*i^3*(c + d*x)) - (7*b^2*B*(b*c - a*d)*g^3*n*Log[c
 + d*x])/(2*d^4*i^3) + (3*b^2*B*(b*c - a*d)*g^3*n*Log[-((d*(a + b*x))/(b*c
- a*d))]*Log[c + d*x])/(d^4*i^3) - (3*b^2*(b*c - a*d)*g^3*(A + B*Log[e*((a
+ b*x)/(c + d*x))^n])*Log[c + d*x])/(d^4*i^3) - (3*b^2*B*(b*c - a*d)*g^3*n*
Log[c + d*x]^2)/(2*d^4*i^3) + (3*b^2*B*(b*c - a*d)*g^3*n*PolyLog[2, (b*(c +
 d*x))/(b*c - a*d)])/(d^4*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(151c+151dx)^3}\,dx = \int \left(\frac{b^3g^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3442951d^3} + \frac{(-bc+ad)^3g^3\left(A+B\log\left(e\left(\frac{a+}{c+}\right.\right.\right.}{3442951d^3(c+dx)^3}\right.$$

$$= \frac{\left(b^3g^3\right)\int\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx}{3442951d^3} - \frac{\left(3b^2(bc-ad)g^3\right)\int\frac{A+B\log\left(e\right.}{c+d}}{3442951d^3}$$

$$= \frac{Ab^3g^3x}{3442951d^3} + \frac{(bc-ad)^3g^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{6885902d^4(c+dx)^2} - \frac{3b(bc-ad)^2g}{344}$$

$$= \frac{Ab^3g^3x}{3442951d^3} + \frac{b^2Bg^3(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{3442951d^3} + \frac{(bc-ad)^3g^3\left(A+B\right.}{6885902d^4(}$$

$$= \frac{Ab^3g^3x}{3442951d^3} + \frac{b^2Bg^3(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{3442951d^3} + \frac{(bc-ad)^3g^3\left(A+B\right.}{6885902d^4(}$$

$$= \frac{Ab^3g^3x}{3442951d^3} - \frac{B(bc-ad)^3g^3n}{13771804d^4(c+dx)^2} + \frac{5bB(bc-ad)^2g^3n}{6885902d^4(c+dx)} + \frac{5b^2B(b}{}$$

$$= \frac{Ab^3g^3x}{3442951d^3} - \frac{B(bc-ad)^3g^3n}{13771804d^4(c+dx)^2} + \frac{5bB(bc-ad)^2g^3n}{6885902d^4(c+dx)} + \frac{5b^2B(b}{}$$

$$= \frac{Ab^3g^3x}{3442951d^3} - \frac{B(bc-ad)^3g^3n}{13771804d^4(c+dx)^2} + \frac{5bB(bc-ad)^2g^3n}{6885902d^4(c+dx)} + \frac{5b^2B(b}{}$$

Mathematica [A] time = 0.45, size = 334, normalized size = 0.87

$$g^3\left(-12b^2(bc-ad)\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) - \frac{12b(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{c+dx} + \frac{2(bc-ad)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{(c+dx)^2} +\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d
*i*x)^3,x]
```

```
[Out] (g^3*(4*A*b^3*d*x - (B*(b*c - a*d)^3*n)/(c + d*x)^2 + (10*b*B*(b*c - a*d)^2
*n)/(c + d*x) + 10*b^2*B*(b*c - a*d)*n*Log[a + b*x] + 4*b^2*B*d*(a + b*x)*L
og[e*((a + b*x)/(c + d*x))^n] + (2*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c
```

```
 + d*x))^n]))/(c + d*x)^2 - (12*b*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n]))/(c + d*x) - 14*b^2*B*(b*c - a*d)*n*Log[c + d*x] - 12*b^2*(b*c
- a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 6*b^2*B*(b*c -
 a*d)*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x]
+ 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(4*d^4*i^3)
```

fricas [**F**] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{Ab^3g^3x^3 + 3\,Aab^2g^3x^2 + 3\,Aa^2bg^3x + Aa^3g^3 + \left(Bb^3g^3x^3 + 3\,Bab^2g^3x^2 + 3\,Ba^2bg^3x + Ba^3g^3\right)\log\left(e\right.}{d^3i^3x^3 + 3\,cd^2i^3x^2 + 3\,c^2di^3x + c^3i^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, a
lgorithm="fricas")
```

```
[Out] integral((A*b^3*g^3*x^3 + 3*A*a*b^2*g^3*x^2 + 3*A*a^2*b*g^3*x + A*a^3*g^3 +
 (B*b^3*g^3*x^3 + 3*B*a*b^2*g^3*x^2 + 3*B*a^2*b*g^3*x + B*a^3*g^3)*log(e*((
b*x + a)/(d*x + c))^n))/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^
3*i^3), x)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [**F**] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^{3} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right) + A\right)}{\left(dix + ci\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)
```

```
[Out] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)
```

maxima [**B**] time = 5.52, size = 2894, normalized size = 7.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, a
lgorithm="maxima")
```

```
[Out] 3/4*B*a^2*b*g^3*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*
d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3)
 + 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*
i^3) - 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d
^4)*i^3)) + 1/4*B*a^3*g^3*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3
*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*l
og(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/
```

```
((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) - 1/2*A*b^3*g^3*((6*c^2*d*x + 5*
c^3)/(d^6*i^3*x^2 + 2*c*d^5*i^3*x + c^2*d^4*i^3) - 2*x/(d^3*i^3) + 6*c*log(
d*x + c)/(d^4*i^3)) + 3/2*A*a*b^2*g^3*((4*c*d*x + 3*c^2)/(d^5*i^3*x^2 + 2*c
*d^4*i^3*x + c^2*d^3*i^3) + 2*log(d*x + c)/(d^3*i^3)) - 3/2*(2*d*x + c)*B*a
^2*b*g^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^4*i^3*x^2 + 2*c*d^3*i^3*
x + c^2*d^2*i^3) - 3/2*(2*d*x + c)*A*a^2*b*g^3/(d^4*i^3*x^2 + 2*c*d^3*i^3*x
 + c^2*d^2*i^3) - 1/2*B*a^3*g^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^3
*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A*a^3*g^3/(d^3*i^3*x^2 + 2*c*d^
2*i^3*x + c^2*d*i^3) + 1/2*(6*a^3*b^2*d^3*g^3*log(e) - (7*g^3*n + 6*g^3*log
(e))*b^5*c^3 + (19*g^3*n + 18*g^3*log(e))*a*b^4*c^2*d - 2*(7*g^3*n + 9*g^3*
log(e))*a^2*b^3*c*d^2)*B*log(d*x + c)/(b^2*c^2*d^4*i^3 - 2*a*b*c*d^5*i^3 +
a^2*d^6*i^3) + 1/4*(4*(b^5*c^2*d^3*g^3*log(e) - 2*a*b^4*c*d^4*g^3*log(e) +
a^2*b^3*d^5*g^3*log(e))*B*x^3 + 8*(b^5*c^3*d^2*g^3*log(e) - 2*a*b^4*c^2*d^3
*g^3*log(e) + a^2*b^3*c*d^4*g^3*log(e))*B*x^2 + 2*((5*g^3*n - 4*g^3*log(e))
*b^5*c^4*d - 20*(g^3*n - g^3*log(e))*a*b^4*c^3*d^2 + (27*g^3*n - 28*g^3*log
(e))*a^2*b^3*c^2*d^3 - 12*(g^3*n - g^3*log(e))*a^3*b^2*c*d^4)*B*x + 12*((b^
5*c^3*d^2*g^3*n - 3*a*b^4*c^2*d^3*g^3*n + 3*a^2*b^3*c*d^4*g^3*n - a^3*b^2*d
^5*g^3*n)*B*x^2 + 2*(b^5*c^4*d*g^3*n - 3*a*b^4*c^3*d^2*g^3*n + 3*a^2*b^3*c^
2*d^3*g^3*n - a^3*b^2*c*d^4*g^3*n)*B*x + (b^5*c^5*g^3*n - 3*a*b^4*c^4*d*g^3
*n + 3*a^2*b^3*c^3*d^2*g^3*n - a^3*b^2*c^2*d^3*g^3*n)*B)*log(b*x + a)*log(d
*x + c) - 6*((b^5*c^3*d^2*g^3*n - 3*a*b^4*c^2*d^3*g^3*n + 3*a^2*b^3*c*d^4*g
^3*n - a^3*b^2*d^5*g^3*n)*B*x^2 + 2*(b^5*c^4*d*g^3*n - 3*a*b^4*c^3*d^2*g^3*
n + 3*a^2*b^3*c^2*d^3*g^3*n - a^3*b^2*c*d^4*g^3*n)*B*x + (b^5*c^5*g^3*n - 3
*a*b^4*c^4*d*g^3*n + 3*a^2*b^3*c^3*d^2*g^3*n - a^3*b^2*c^2*d^3*g^3*n)*B)*lo
g(d*x + c)^2 + ((9*g^3*n - 10*g^3*log(e))*b^5*c^5 - (35*g^3*n - 38*g^3*log(
e))*a*b^4*c^4*d + (47*g^3*n - 46*g^3*log(e))*a^2*b^3*c^3*d^2 - 3*(7*g^3*n -
 6*g^3*log(e))*a^3*b^2*c^2*d^3)*B + 2*((5*b^5*c^3*d^2*g^3*n - 13*a*b^4*c^2*
d^3*g^3*n + 8*a^2*b^3*c*d^4*g^3*n + 2*a^3*b^2*d^5*g^3*n)*B*x^2 + 2*(5*b^5*c
^4*d*g^3*n - 13*a*b^4*c^3*d^2*g^3*n + 8*a^2*b^3*c^2*d^3*g^3*n + 2*a^3*b^2*c
*d^4*g^3*n)*B*x + (5*b^5*c^5*g^3*n - 13*a*b^4*c^4*d*g^3*n + 8*a^2*b^3*c^3*d
^2*g^3*n + 2*a^3*b^2*c^2*d^3*g^3*n)*B)*log(b*x + a) + 2*(2*(b^5*c^2*d^3*g^3
 - 2*a*b^4*c*d^4*g^3 + a^2*b^3*d^5*g^3)*B*x^3 + 4*(b^5*c^3*d^2*g^3 - 2*a*b^
4*c^2*d^3*g^3 + a^2*b^3*c*d^4*g^3)*B*x^2 - 4*(b^5*c^4*d*g^3 - 5*a*b^4*c^3*d
^2*g^3 + 7*a^2*b^3*c^2*d^3*g^3 - 3*a^3*b^2*c*d^4*g^3)*B*x - (5*b^5*c^5*g^3
- 19*a*b^4*c^4*d*g^3 + 23*a^2*b^3*c^3*d^2*g^3 - 9*a^3*b^2*c^2*d^3*g^3)*B -
6*((b^5*c^3*d^2*g^3 - 3*a*b^4*c^2*d^3*g^3 + 3*a^2*b^3*c*d^4*g^3 - a^3*b^2*d
^5*g^3)*B*x^2 + 2*(b^5*c^4*d*g^3 - 3*a*b^4*c^3*d^2*g^3 + 3*a^2*b^3*c^2*d^3*
g^3 - a^3*b^2*c*d^4*g^3)*B*x + (b^5*c^5*g^3 - 3*a*b^4*c^4*d*g^3 + 3*a^2*b^3
*c^3*d^2*g^3 - a^3*b^2*c^2*d^3*g^3)*B)*log(d*x + c))*log((b*x + a)^n) - 2*(
2*(b^5*c^2*d^3*g^3 - 2*a*b^4*c*d^4*g^3 + a^2*b^3*d^5*g^3)*B*x^3 + 4*(b^5*c^
3*d^2*g^3 - 2*a*b^4*c^2*d^3*g^3 + a^2*b^3*c*d^4*g^3)*B*x^2 - 4*(b^5*c^4*d*g
^3 - 5*a*b^4*c^3*d^2*g^3 + 7*a^2*b^3*c^2*d^3*g^3 - 3*a^3*b^2*c*d^4*g^3)*B*x
 - (5*b^5*c^5*g^3 - 19*a*b^4*c^4*d*g^3 + 23*a^2*b^3*c^3*d^2*g^3 - 9*a^3*b^2
*c^2*d^3*g^3)*B - 6*((b^5*c^3*d^2*g^3 - 3*a*b^4*c^2*d^3*g^3 + 3*a^2*b^3*c*d
^4*g^3 - a^3*b^2*d^5*g^3)*B*x^2 + 2*(b^5*c^4*d*g^3 - 3*a*b^4*c^3*d^2*g^3 +
3*a^2*b^3*c^2*d^3*g^3 - a^3*b^2*c*d^4*g^3)*B*x + (b^5*c^5*g^3 - 3*a*b^4*c^4
*d*g^3 + 3*a^2*b^3*c^3*d^2*g^3 - a^3*b^2*c^2*d^3*g^3)*B)*log(d*x + c))*log(
(d*x + c)^n))/(b^2*c^4*d^4*i^3 - 2*a*b*c^3*d^5*i^3 + a^2*c^2*d^6*i^3 + (b^2
*c^2*d^6*i^3 - 2*a*b*c*d^7*i^3 + a^2*d^8*i^3)*x^2 + 2*(b^2*c^3*d^5*i^3 - 2*
a*b*c^2*d^6*i^3 + a^2*c*d^7*i^3)*x) - 3*(b^3*c*g^3*n - a*b^2*d*g^3*n)*(log(
b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a
*d)))*B/(d^4*i^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a g+b g x\right)^3 \left(A+B \ln\left(e \left(\frac{a+b x}{c+d x}\right)^n\right)\right)}{\left(c i+d i x\right)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
3,x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

3.152 $\int \frac{(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ci+dix)^3}\,dx$

Optimal. Leaf size=263

$$-\frac{b^2g^2\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^3i^3}-\frac{g^2(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2di^3(c+dx)^2}-\frac{Abg^2(a+bx)}{d^2i^3(c+dx)}-\frac{b^2Bg^2n\mathrm{Li}_2\left(\frac{d(a}{b(c}\right.}{d^3i^3}$$

```
[Out] 1/4*B*g^2*n*(b*x+a)^2/d/i^3/(d*x+c)^2-A*b*g^2*(b*x+a)/d^2/i^3/(d*x+c)+b*B*g
^2*n*(b*x+a)/d^2/i^3/(d*x+c)-b*B*g^2*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/d^2/
i^3/(d*x+c)-1/2*g^2*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d/i^3/(d*x+c)
^2-b^2*g^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/d^3/i^3
-b^2*B*g^2*n*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i^3
```

Rubi [A] time = 0.60, antiderivative size = 356, normalized size of antiderivative = 1.35, number of steps used = 18, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{b^2Bg^2n\mathrm{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^3i^3}+\frac{b^2g^2\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^3i^3}+\frac{2bg^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^3i^3(c+dx)}-$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^
3,x]
```

```
[Out] (B*(b*c - a*d)^2*g^2*n)/(4*d^3*i^3*(c + d*x)^2) - (3*b*B*(b*c - a*d)*g^2*n)
/(2*d^3*i^3*(c + d*x)) - (3*b^2*B*g^2*n*Log[a + b*x])/(2*d^3*i^3) - ((b*c -
 a*d)^2*g^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^3*i^3*(c + d*x)^2)
 + (2*b*(b*c - a*d)*g^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^3*i^3*(c
 + d*x)) + (3*b^2*B*g^2*n*Log[c + d*x])/(2*d^3*i^3) - (b^2*B*g^2*n*Log[-((d
*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^3*i^3) + (b^2*g^2*(A + B*Log[e*(
(a + b*x)/(c + d*x))^n])*Log[c + d*x])/(d^3*i^3) + (b^2*B*g^2*n*Log[c + d*x
]^2)/(2*d^3*i^3) - (b^2*B*g^2*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^3
*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
```

```
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(152c+152dx)^3}dx = \int \left(\frac{(-bc+ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3511808d^2(c+dx)^3} - \frac{b(bc-ad)g^2\left(A+B\log\right.}{1755904d^2(c\right.$$

$$= \frac{\left(b^2g^2\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}dx}{3511808d^2} - \frac{\left(b(bc-ad)g^2\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^2}dx}{1755904d^2} +$$

$$= -\frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7023616d^3(c+dx)^2} + \frac{b(bc-ad)g^2\left(A+B\log\left(e\right.\right.}{1755904d^3(c+d}$$

$$= -\frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7023616d^3(c+dx)^2} + \frac{b(bc-ad)g^2\left(A+B\log\left(e\right.\right.}{1755904d^3(c+d}$$

$$= -\frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7023616d^3(c+dx)^2} + \frac{b(bc-ad)g^2\left(A+B\log\left(e\right.\right.}{1755904d^3(c+d}$$

$$= \frac{B(bc-ad)^2g^2n}{14047232d^3(c+dx)^2} - \frac{3bB(bc-ad)g^2n}{7023616d^3(c+dx)} - \frac{3b^2Bg^2n\log(a+bx)}{7023616d^3}$$

$$= \frac{B(bc-ad)^2g^2n}{14047232d^3(c+dx)^2} - \frac{3bB(bc-ad)g^2n}{7023616d^3(c+dx)} - \frac{3b^2Bg^2n\log(a+bx)}{7023616d^3}$$

$$= \frac{B(bc-ad)^2g^2n}{14047232d^3(c+dx)^2} - \frac{3bB(bc-ad)g^2n}{7023616d^3(c+dx)} - \frac{3b^2Bg^2n\log(a+bx)}{7023616d^3}$$

Mathematica [A] time = 0.34, size = 259, normalized size = 0.98

$$g^2\left(4b^2\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) + \frac{8b(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{c+dx} - \frac{2(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{(c+dx)^2} - 2b^2Bn\left(2\mathrm{Li}_2\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d
*i*x)^3,x]
```

```
[Out] (g^2*((B*(b*c - a*d)^2*n)/(c + d*x)^2 - (6*b*B*(b*c - a*d)*n)/(c + d*x) - 6
*b^2*B*n*Log[a + b*x] - (2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))
^n]))/(c + d*x)^2 + (8*b*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
)/(c + d*x) + 6*b^2*B*n*Log[c + d*x] + 4*b^2*(A + B*Log[e*((a + b*x)/(c + d
*x))^n])*Log[c + d*x] - 2*b^2*B*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - L
og[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(4*d
^3*i^3)
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{Ab^2g^2x^2 + 2\,Aabg^2x + Aa^2g^2 + \left(Bb^2g^2x^2 + 2\,Babg^2x + Ba^2g^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{d^3i^3x^3 + 3\,cd^2i^3x^2 + 3\,c^2di^3x + c^3i^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, a
lgorithm="fricas")
```

```
[Out] integral((A*b^2*g^2*x^2 + 2*A*a*b*g^2*x + A*a^2*g^2 + (B*b^2*g^2*x^2 + 2*B*
a*b*g^2*x + B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n))/(d^3*i^3*x^3 + 3*c*d
^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{2} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)}{\left(dix+ci\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)
```

```
[Out] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, a
lgorithm="maxima")
```

```
[Out] 1/2*B*a*b*g^2*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^
5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) +
 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^
3) - 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4
)*i^3)) + 1/4*B*a^2*g^2*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x
^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log
(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((
b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) + 1/2*A*b^2*g^2*((4*c*d*x + 3*c^2)
/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2*log(d*x + c)/(d^3*i^3)) -
1/2*B*b^2*g^2*((2*(d^2*n*x^2 + 2*c*d*n*x + c^2*n)*log(b*x + a)*log(d*x + c)
 - (d^2*n*x^2 + 2*c*d*n*x + c^2*n)*log(d*x + c)^2 - (4*c*d*x + 3*c^2 + 2*(d
^2*x^2 + 2*c*d*x + c^2)*log(d*x + c))*log((b*x + a)^n) + (4*c*d*x + 3*c^2 +
 2*(d^2*x^2 + 2*c*d*x + c^2)*log(d*x + c))*log((d*x + c)^n))/(d^5*i^3*x^2 +
 2*c*d^4*i^3*x + c^2*d^3*i^3) - 2*integrate(1/2*(2*b*d^3*x^3*log(e) + 2*a*d
^3*x^2*log(e) - 3*b*c^3*n + 3*a*c^2*d*n - 4*(b*c^2*d*n - a*c*d^2*n)*x + 2*(
b*d^3*n*x^3 + a*c^2*d*n + (2*b*c*d^2*n + a*d^3*n)*x^2 + (b*c^2*d*n + 2*a*c*
d^2*n)*x)*log(b*x + a))/(b*d^6*i^3*x^4 + a*c^3*d^3*i^3 + (3*b*c*d^5*i^3 + a
*d^6*i^3)*x^3 + 3*(b*c^2*d^4*i^3 + a*c*d^5*i^3)*x^2 + (b*c^3*d^3*i^3 + 3*a*
c^2*d^4*i^3)*x), x)) - (2*d*x + c)*B*a*b*g^2*log(e*(b*x/(d*x + c) + a/(d*x
+ c))^n)/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (2*d*x + c)*A*a*b*g^
2/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - 1/2*B*a^2*g^2*log(e*(b*x/(d
```

```
*x + c) + a/(d*x + c))^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A
*a^2*g^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)^2\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{{\left(c\,i+d\,i\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
3,x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

3.153 $\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(ci+dix)^3}\,dx$

Optimal. Leaf size=89

$$\frac{g(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2i^3(c+dx)^2(bc-ad)}-\frac{Bgn(a+bx)^2}{4i^3(c+dx)^2(bc-ad)}$$

```
[Out] -1/4*B*g*n*(b*x+a)^2/(-a*d+b*c)/i^3/(d*x+c)^2+1/2*g*(b*x+a)^2*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))/(-a*d+b*c)/i^3/(d*x+c)^2
```

Rubi [B] time = 0.32, antiderivative size = 201, normalized size of antiderivative = 2.26, number of steps used = 10, number of rules used = 4, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.098, Rules used = {2528, 2525, 12, 44}

$$-\frac{bg\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2i^3(c+dx)}+\frac{g(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2d^2i^3(c+dx)^2}+\frac{b^2Bgn\log(a+bx)}{2d^2i^3(bc-ad)}-\frac{b^2Bgn\log(c+dx)}{2d^2i^3(bc-ad)}-\frac{B}{4d}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i*x)^3,
x]
```

```
[Out] -(B*(b*c - a*d)*g*n)/(4*d^2*i^3*(c + d*x)^2) + (b*B*g*n)/(2*d^2*i^3*(c + d*
x)) + (b^2*B*g*n*Log[a + b*x])/(2*d^2*(b*c - a*d)*i^3) + ((b*c - a*d)*g*(A
+ B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^2*i^3*(c + d*x)^2) - (b*g*(A + B*
Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*i^3*(c + d*x)) - (b^2*B*g*n*Log[c + d
*x])/(2*d^2*(b*c - a*d)*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(153c+153dx)^3}\,dx = \int \left(\frac{(-bc+ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3581577d(c+dx)^3} + \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3581577d(c+dx)^2}\right.$$

$$= \frac{(bg)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^2}\,dx}{3581577d} - \frac{((bc-ad)g)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^3}\,dx}{3581577d}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7163154d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3581577d^2(c+dx)} + \cdots$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7163154d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3581577d^2(c+dx)} + \cdots$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7163154d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3581577d^2(c+dx)} + \cdots$$

$$= -\frac{B(bc-ad)gn}{14326308d^2(c+dx)^2} + \frac{bBgn}{7163154d^2(c+dx)} + \frac{b^2Bgn\log(a+bx)}{7163154d^2(bc-ad)} \cdots$$

Mathematica [B] time = 0.16, size = 215, normalized size = 2.42

$$\frac{g\left(-\frac{b\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2(c+dx)} + \frac{(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2d^2(c+dx)^2} - \frac{Bn\left(\frac{2b^2\log(a+bx)}{bc-ad} - \frac{2b^2\log(c+dx)}{bc-ad} + \frac{bc-ad}{(c+dx)^2} + \frac{2b}{c+dx}\right)}{4d^2} + \frac{bBn\left(\frac{b\log(a+bx)}{bc-ad} - \frac{b\log(c+dx)}{bc-ad} + \frac{1}{c+d\cdots}\right)}{d^2}\cdots}{i^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c*i + d*i
*x)^3,x]
```

```
[Out] (g*(((b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^2*(c + d*x)^2
) - (b*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*(c + d*x)) + (b*B*n*((c
 + d*x)^(-1) + (b*Log[a + b*x])/(b*c - a*d) - (b*Log[c + d*x])/(b*c - a*d))
)/d^2 - (B*n*((b*c - a*d)/(c + d*x)^2 + (2*b)/(c + d*x) + (2*b^2*Log[a + b*
x])/(b*c - a*d) - (2*b^2*Log[c + d*x])/(b*c - a*d)))/(4*d^2)))/i^3
```

fricas [B] time = 0.94, size = 250, normalized size = 2.81

$$\frac{\left(Bb^2c^2 - Ba^2d^2\right)gn - 2\left(Ab^2c^2 - Aa^2d^2\right)g + 2\left(\left(Bb^2cd - Babd^2\right)gn - 2\left(Ab^2cd - Aabd^2\right)g\right)x - 2\left(2\left(Bb^2cd - Baba\cdots\right.\right.}{4\left(\left(bcd^4 - ad^5\right)i^3x^2 + 2\left(bc^2d^3 - acd^4\right)i^3x + \cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, alg
orithm="fricas")
```

```
[Out] 1/4*((B*b^2*c^2 - B*a^2*d^2)*g*n - 2*(A*b^2*c^2 - A*a^2*d^2)*g + 2*((B*b^2*
c*d - B*a*b*d^2)*g*n - 2*(A*b^2*c*d - A*a*b*d^2)*g)*x - 2*(2*(B*b^2*c*d - B
*a*b*d^2)*g*x + (B*b^2*c^2 - B*a^2*d^2)*g)*log(e) + 2*(B*b^2*d^2*g*n*x^2 +
2*B*a*b*d^2*g*n*x + B*a^2*d^2*g*n)*log((b*x + a)/(d*x + c)))/((b*c*d^4 - a*
d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3)
```

giac [A] time = 9.47, size = 97, normalized size = 1.09

$$\frac{1}{4}\left(\frac{2\,(bx+a)^2 Bgin\log\left(\frac{bx+a}{dx+c}\right)}{(dx+c)^2}-\frac{\left(Bgin-2\,Agi-2\,Bgi\right)(bx+a)^2}{(dx+c)^2}\right)\left(\frac{bc}{(bc-ad)^2}-\frac{ad}{(bc-ad)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, alg
orithm="giac")
```

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

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)}{(dix+ci)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)
```

```
[Out] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)
```

maxima [B] time = 1.53, size = 578, normalized size = 6.49

$$\frac{1}{4}\,Bbgn\left(\frac{bc^2-3\,acd+2\left(bcd-2\,ad^2\right)x}{\left(bcd^4-ad^5\right)i^3x^2+2\left(bc^2d^3-acd^4\right)i^3x+\left(bc^3d^2-ac^2d^3\right)i^3}+\frac{2\left(b^2c-2\,abd\right)\log\left(bx+a\right)}{\left(b^2c^2d^2-2\,abcd^3+a^2d^4\right)i^3}-\frac{2\left(b^2c-\right.}{\left(b^2c^2d^2-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, alg
orithm="maxima")
```

```
[Out] 1/4*B*b*g*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)*i
^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) + 2*(
b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) -
 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^
3)) + 1/4*B*a*g*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(
b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log(b*x + a
)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*
d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) - 1/2*(2*d*x + c)*B*b*g*log(e*(b*x/(d*x +
c) + a/(d*x + c))^n)/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - 1/2*(2*d
*x + c)*A*b*g/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - 1/2*B*a*g*log(e
*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)
 - 1/2*A*a*g/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)
```

mupad [B] time = 5.49, size = 205, normalized size = 2.30

$$-\frac{x\left(2\,A\,b\,d\,g-B\,b\,d\,g\,n\right)+A\,a\,d\,g+A\,b\,c\,g-\frac{B\,a\,d\,g\,n}{2}-\frac{B\,b\,c\,g\,n}{2}}{2\,c^2\,d^2\,i^3+4\,c\,d^3\,i^3\,x+2\,d^4\,i^3\,x^2}-\frac{\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\left(\frac{B\,a\,g}{2\,d}+\frac{B\,b\,c\,g}{2\,d^2}+\frac{B\,b\,g\,x}{d}\right)}{c^2\,i^3+2\,c\,d\,i^3\,x+d^2\,i^3\,x^2}+\frac{B\,b^2\,g\,n}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^3,
x)
```

```
[Out] (B*b^2*g*n*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*1i)/(d^2*i^3*(a*d - b
*c)) - (log(e*((a + b*x)/(c + d*x))^n)*((B*a*g)/(2*d) + (B*b*c*g)/(2*d^2) +
 (B*b*g*x)/d))/(c^2*i^3 + d^2*i^3*x^2 + 2*c*d*i^3*x) - (x*(2*A*b*d*g - B*b*
d*g*n) + A*a*d*g + A*b*c*g - (B*a*d*g*n)/2 - (B*b*c*g*n)/2)/(2*c^2*d^2*i^3
+ 2*d^4*i^3*x^2 + 4*c*d^3*i^3*x)
```

sympy **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**3,x)
```

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

3.154 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ci+dix)^3}\,dx$

Optimal. Leaf size=151

$$-\frac{B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A}{2di^3(c+dx)^2}+\frac{b^2Bn\log(a+bx)}{2di^3(bc-ad)^2}-\frac{b^2Bn\log(c+dx)}{2di^3(bc-ad)^2}+\frac{bBn}{2di^3(c+dx)(bc-ad)}+\frac{Bn}{4di^3(c+dx)^2}$$

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

Rubi [A] time = 0.10, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {2525, 12, 44}

$$-\frac{B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A}{2di^3(c+dx)^2}+\frac{b^2Bn\log(a+bx)}{2di^3(bc-ad)^2}-\frac{b^2Bn\log(c+dx)}{2di^3(bc-ad)^2}+\frac{bBn}{2di^3(c+dx)(bc-ad)}+\frac{Bn}{4di^3(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x)^3,x]
```

```
[Out] (B*n)/(4*d*i^3*(c + d*x)^2) + (b*B*n)/(2*d*(b*c - a*d)*i^3*(c + d*x)) + (b^
2*B*n*Log[a + b*x])/(2*d*(b*c - a*d)^2*i^3) - (A + B*Log[e*((a + b*x)/(c +
d*x))^n])/(2*d*i^3*(c + d*x)^2) - (b^2*B*n*Log[c + d*x])/(2*d*(b*c - a*d)^2
*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(154c+154dx)^3}\,dx = -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7304528d(c+dx)^2} + \frac{(Bn)\int \frac{bc-ad}{23716(a+bx)(c+dx)^3}\,dx}{308d}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7304528d(c+dx)^2} + \frac{(B(bc-ad)n)\int \frac{1}{(a+bx)(c+dx)^3}\,dx}{7304528d}$$

$$= -\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7304528d(c+dx)^2} + \frac{(B(bc-ad)n)\int \left(\frac{b^3}{(bc-ad)^3(a+bx)} - \frac{d}{(bc-ad)(c+dx)^3} - \frac{bd}{(bc-ad)^2(c+\cdots}\right.}{7304528d}$$

$$= \frac{Bn}{14609056d(c+dx)^2} + \frac{bBn}{7304528d(bc-ad)(c+dx)} + \frac{b^2Bn\log(a+bx)}{7304528d(bc-ad)^2} - \frac{A+\cdots}{730\cdots}$$

Mathematica [A] time = 0.14, size = 115, normalized size = 0.76

$$\frac{\frac{Bn\left(2b^2(c+dx)^2\log(a+bx)+(bc-ad)(-ad+3bc+2bdx)-2b^2(c+dx)^2\log(c+dx)\right)}{(bc-ad)^2} - 2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{4di^3(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/(c*i + d*i*x)^3,x]
```

```
[Out] (-2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + (B*n*((b*c - a*d)*(3*b*c - a*d
 + 2*b*d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*x)^2*Log[c + d*
x]))/(b*c - a*d)^2)/(4*d*i^3*(c + d*x)^2)
```

fricas [A] time = 0.91, size = 266, normalized size = 1.76

$$-\frac{2\,Ab^2c^2 - 4\,Aabcd + 2\,Aa^2d^2 - 2\left(Bb^2cd - Babd^2\right)nx - \left(3\,Bb^2c^2 - 4\,Babcd + Ba^2d^2\right)n + 2\left(Bb^2c^2 - 2\,Babcd + B\cdots\right.}{4\left(\left(b^2c^2d^3 - 2\,abcd^4 + a^2d^5\right)i^3x^2 + 2\left(b^2c^3d^2 - 2\,abc^2d^3 + a^2cd^4\right)i^3x\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="fric
as")
```

```
[Out] -1/4*(2*A*b^2*c^2 - 4*A*a*b*c*d + 2*A*a^2*d^2 - 2*(B*b^2*c*d - B*a*b*d^2)*n
*x - (3*B*b^2*c^2 - 4*B*a*b*c*d + B*a^2*d^2)*n + 2*(B*b^2*c^2 - 2*B*a*b*c*d
 + B*a^2*d^2)*log(e) - 2*(B*b^2*d^2*n*x^2 + 2*B*b^2*c*d*n*x + (2*B*a*b*c*d
- B*a^2*d^2)*n)*log((b*x + a)/(d*x + c)))/((b^2*c^2*d^3 - 2*a*b*c*d^4 + a^2
*d^5)*i^3*x^2 + 2*(b^2*c^3*d^2 - 2*a*b*c^2*d^3 + a^2*c*d^4)*i^3*x + (b^2*c^
4*d - 2*a*b*c^3*d^2 + a^2*c^2*d^3)*i^3)
```

giac [A] time = 1.65, size = 187, normalized size = 1.24

$$\frac{1}{4}\left(2\left(\frac{2\,(bx+a)Bbin}{(bc-ad)(dx+c)} - \frac{(bx+a)^2Bdin}{(bc-ad)(dx+c)^2}\right)\log\left(\frac{bx+a}{dx+c}\right) + \frac{(Bdin - 2\,Adi - 2\,Bdi)(bx+a)^2}{(bc-ad)(dx+c)^2} - \frac{4\,(Bbin - Abi - \cdots}{(bc-ad)(d\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="giac
")
```

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

```
*B*d*i)*(b*x + a)^2/((b*c - a*d)*(d*x + c)^2) - 4*(B*b*i*n - A*b*i - B*b*i)
*(b*x + a)/((b*c - a*d)*(d*x + c)))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right) + A}{(dix + ci)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(d*i*x+c*i)^3,x)
```

maxima [A] time = 1.46, size = 259, normalized size = 1.72

$$\frac{1}{4}\, Bn \left(\frac{2\, bdx + 3\, bc - ad}{\left(bcd^{3} - ad^{4}\right) i^{3} x^{2} + 2\left(bc^{2}d^{2} - acd^{3}\right) i^{3} x + \left(bc^{3}d - ac^{2}d^{2}\right) i^{3}} + \frac{2\, b^{2} \log\left(bx + a\right)}{\left(b^{2}c^{2}d - 2\, abcd^{2} + a^{2}d^{3}\right) i^{3}} - \frac{2\, b^{2} \log}{\left(b^{2}c^{2}d - 2\, ab\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(d*i*x+c*i)^3,x, algorithm="maxi
ma")
```

```
[Out] 1/4*B*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2
- a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log(b*x + a)/((b^2*c^
2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b*
c*d^2 + a^2*d^3)*i^3)) - 1/2*B*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^3*
i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A/(d^3*i^3*x^2 + 2*c*d^2*i^3*x +
 c^2*d*i^3)
```

mupad [B] time = 4.97, size = 221, normalized size = 1.46

$$\frac{B\, b^2\, n\, \mathrm{atanh}\left(\frac{2\, a^2\, d^3\, i^3 - 2\, b^2\, c^2\, d\, i^3}{2\, d\, i^3\, \left(a\, d - b\, c\right)^2} + \frac{2\, b\, d\, x}{a\, d - b\, c}\right)}{d\, i^3\, \left(a\, d - b\, c\right)^2} - \frac{B\, \ln\left(e\, \left(\frac{a + b\, x}{c + d\, x}\right)^n\right)}{2\, d\, \left(c^2\, i^3 + 2\, c\, d\, i^3\, x + d^2\, i^3\, x^2\right)} - \frac{\frac{2\, A\, a\, d - 2\, A\, b\, c - B\, a\, d\, n + 3\, B\, b\, c\, n}{2\, \left(a\, d - b\, c\right)} + \frac{B\, b\, d\, n\, x}{a\, d - b\, c}}{2\, c^2\, d\, i^3 + 4\, c\, d^2\, i^3\, x + 2\, d^3\, i^3\, x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/(c*i + d*i*x)^3,x)
```

```
[Out] (B*b^2*n*atanh((2*a^2*d^3*i^3 - 2*b^2*c^2*d*i^3)/(2*d*i^3*(a*d - b*c)^2) +
(2*b*d*x)/(a*d - b*c)))/(d*i^3*(a*d - b*c)^2) - (B*log(e*((a + b*x)/(c + d*
x))^n))/(2*d*(c^2*i^3 + d^2*i^3*x^2 + 2*c*d*i^3*x)) - ((2*A*a*d - 2*A*b*c -
 B*a*d*n + 3*B*b*c*n)/(2*(a*d - b*c)) + (B*b*d*n*x)/(a*d - b*c))/(2*c^2*d*i
^3 + 2*d^3*i^3*x^2 + 4*c*d^2*i^3*x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(d*i*x+c*i)**3,x)
```

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

3.155 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)(ci+dix)^3}\,dx$

Optimal. Leaf size=254

$$\frac{b^2\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{gi^3(bc-ad)^3}+\frac{d^2(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2gi^3(c+dx)^2(bc-ad)^3}-\frac{2bd(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{gi^3(c+dx)(bc-ad)^3}$$

```
[Out] -1/4*B*n*(4*b-d*(b*x+a)/(d*x+c))^2/(-a*d+b*c)^3/g/i^3+1/2*d^2*(b*x+a)^2*(A+
B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g/i^3/(d*x+c)^2-2*b*d*(b*x+a)*(A+
B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g/i^3/(d*x+c)+b^2*(A+B*ln(e*((b*x
+a)/(d*x+c))^n))*ln((b*x+a)/(d*x+c))/(-a*d+b*c)^3/g/i^3-1/2*b^2*B*n*ln((b*x
+a)/(d*x+c))^2/(-a*d+b*c)^3/g/i^3
```

Rubi [C] time = 0.87, antiderivative size = 557, normalized size of antiderivative = 2.19, number of steps used = 26, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 12, 44}

$$\frac{b^2Bn\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{gi^3(bc-ad)^3}+\frac{b^2Bn\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{gi^3(bc-ad)^3}+\frac{b^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{gi^3(bc-ad)^3}-\frac{b^2\log(c+dx)\left(\right.}{gi^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)*(c*i + d*i*x)^3),
x]
```

```
[Out] -(B*n)/(4*(b*c - a*d)*g*i^3*(c + d*x)^2) - (3*b*B*n)/(2*(b*c - a*d)^2*g*i^3
*(c + d*x)) - (3*b^2*B*n*Log[a + b*x])/(2*(b*c - a*d)^3*g*i^3) - (b^2*B*n*L
og[a + b*x]^2)/(2*(b*c - a*d)^3*g*i^3) + (A + B*Log[e*((a + b*x)/(c + d*x))
^n])/(2*(b*c - a*d)*g*i^3*(c + d*x)^2) + (b*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]))/((b*c - a*d)^2*g*i^3*(c + d*x)) + (b^2*Log[a + b*x]*(A + B*Log[e*(
(a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g*i^3) + (3*b^2*B*n*Log[c + d*x])/
(2*(b*c - a*d)^3*g*i^3) + (b^2*B*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c
+ d*x])/((b*c - a*d)^3*g*i^3) - (b^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
*Log[c + d*x])/((b*c - a*d)^3*g*i^3) - (b^2*B*n*Log[c + d*x]^2)/(2*(b*c - a
*d)^3*g*i^3) + (b^2*B*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c
- a*d)^3*g*i^3) + (b^2*B*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c
- a*d)^3*g*i^3) + (b^2*B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a
*d)^3*g*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(155c+155dx)^3(ag+bgx)}\,dx = \int \left(\frac{b^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3723875(bc-ad)^3g(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3723875(bc-ad)g(c+dx)^3} - \frac{bd\left(A+B\right.}{3723875(b\right.}$$

$$= \frac{b^3\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}dx}{3723875(bc-ad)^3g} - \frac{(b^2d)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}dx}{3723875(bc-ad)^3g} - \frac{(bd)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^2}}{3723875(bc-ad)^2}$$

$$= \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7447750(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3723875(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+bx)}{3723}$$

$$= \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7447750(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3723875(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+bx)}{3723}$$

$$= \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{7447750(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3723875(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+bx)}{3723}$$

$$= -\frac{Bn}{14895500(bc-ad)g(c+dx)^2} - \frac{3bBn}{7447750(bc-ad)^2g(c+dx)} - \frac{3b^2Bn\log(}{7447750(bc}$$

$$= -\frac{Bn}{14895500(bc-ad)g(c+dx)^2} - \frac{3bBn}{7447750(bc-ad)^2g(c+dx)} - \frac{3b^2Bn\log(}{7447750(bc}$$

$$= -\frac{Bn}{14895500(bc-ad)g(c+dx)^2} - \frac{3bBn}{7447750(bc-ad)^2g(c+dx)} - \frac{3b^2Bn\log(}{7447750(bc}$$

Mathematica [C] time = 0.42, size = 434, normalized size = 1.71

$$\frac{4b^2(c+dx)^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) - 4b^2(c+dx)^2\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) + 2(bc-ad)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)*(c*i + d*i*
x)^3),x]
```

```
[Out] (2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*b*(b*c - a*d)*(
c + d*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*b^2*(c + d*x)^2*Log[a +
 b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 4*b^2*(c + d*x)^2*(A + B*Log
[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 4*b*B*n*(c + d*x)*(b*c - a*d +
b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]) - B*n*((b*c - a*d)^2 +
 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*
x)^2*Log[c + d*x]) - 2*b^2*B*n*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*
Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)
]) + 2*b^2*B*n*(c + d*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c +
d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/(4*(b*c - a*
d)^3*g*i^3*(c + d*x)^2)
```

fricas [A] time = 0.92, size = 487, normalized size = 1.92

$$\frac{6\,Ab^2c^2 - 8\,Aabcd + 2\,Aa^2d^2 + 2\left(Bb^2d^2nx^2 + 2\,Bb^2cdnx + Bb^2c^2n\right)\log\left(\frac{bx+a}{dx+c}\right)^2 - \left(7\,Bb^2c^2 - 8\,Babcd + Ba^2d^2\right)n}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, alg
orithm="fricas")
```

```
[Out] 1/4*(6*A*b^2*c^2 - 8*A*a*b*c*d + 2*A*a^2*d^2 + 2*(B*b^2*d^2*n*x^2 + 2*B*b^2
*c*d*n*x + B*b^2*c^2*n)*log((b*x + a)/(d*x + c))^2 - (7*B*b^2*c^2 - 8*B*a*b
*c*d + B*a^2*d^2)*n + 2*(2*A*b^2*c*d - 2*A*a*b*d^2 - 3*(B*b^2*c*d - B*a*b*d
^2)*n)*x + 2*(3*B*b^2*c^2 - 4*B*a*b*c*d + B*a^2*d^2 + 2*(B*b^2*c*d - B*a*b*
d^2)*x + 2*(B*b^2*d^2*x^2 + 2*B*b^2*c*d*x + B*b^2*c^2)*log((b*x + a)/(d*x +
 c)))*log(e) + 2*(2*A*b^2*c^2 - (3*B*b^2*d^2*n - 2*A*b^2*d^2)*x^2 - (4*B*a*
b*c*d - B*a^2*d^2)*n + 2*(2*A*b^2*c*d - (2*B*b^2*c*d + B*a*b*d^2)*n)*x)*log
((b*x + a)/(d*x + c)))/((b^3*c^3*d^2 - 3*a*b^2*c^2*d^3 + 3*a^2*b*c*d^4 - a^
3*d^5)*g*i^3*x^2 + 2*(b^3*c^4*d - 3*a*b^2*c^3*d^2 + 3*a^2*b*c^2*d^3 - a^3*c
*d^4)*g*i^3*x + (b^3*c^5 - 3*a*b^2*c^4*d + 3*a^2*b*c^3*d^2 - a^3*c^2*d^3)*g
*i^3)
```

giac [A] time = 4.01, size = 370, normalized size = 1.46

$$\frac{1}{4}\left(\frac{2\,Bb^2in\log\left(\frac{bx+a}{dx+c}\right)^2}{b^2c^2g-2\,abcdg+a^2d^2g}-2\left(\frac{4\,(bx+a)Bbdin}{\left(b^2c^2g-2\,abcdg+a^2d^2g\right)(dx+c)}-\frac{(bx+a)^2Bd^2in}{\left(b^2c^2g-2\,abcdg+a^2d^2g\right)(dx+c)^2}\right)\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, alg
orithm="giac")
```

```
[Out] 1/4*(2*B*b^2*i*n*log((b*x + a)/(d*x + c))^2/(b^2*c^2*g - 2*a*b*c*d*g + a^2*
d^2*g) - 2*(4*(b*x + a)*B*b*d*i*n/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d
*x + c)) - (b*x + a)^2*B*d^2*i*n/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*
x + c)^2))*log((b*x + a)/(d*x + c)) - 4*(A*b^2 + B*b^2)*log((b*x + a)/(d*x
+ c))/(b^2*c^2*g*i - 2*a*b*c*d*g*i + a^2*d^2*g*i) - (B*d^2*i*n - 2*A*d^2*i
- 2*B*d^2*i)*(b*x + a)^2/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c)^2
) + 8*(B*b*d*i*n - A*b*d*i - B*b*d*i)*(b*x + a)/((b^2*c^2*g - 2*a*b*c*d*g +
 a^2*d^2*g)*(d*x + c)))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int\frac{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A}{\left(bgx+ag\right)(dix+ci)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)/(d*i*x+c*i)^3,x)
```

maxima [B] time = 1.98, size = 888, normalized size = 3.50

$$\frac{1}{2}B\left(\frac{2\,bdx+3\,bc-ad}{\left(b^2c^2d^2-2\,abcd^3+a^2d^4\right)gi^3x^2+2\left(b^2c^3d-2\,abc^2d^2+a^2cd^3\right)gi^3x+\left(b^2c^4-2\,abc^3d+a^2c^2d^2\right)gi^3}+\frac{}{\left(b^3c\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)/(d*i*x+c*i)^3,x, alg
orithm="maxima")
```

```
[Out] 1/2*B*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*g*i^3
*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 - 2*a*b
```

```
*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d
 + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2
*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c
))^n) - 1/4*(7*b^2*c^2 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x
 + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*
x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2
)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^
2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))*B*n/(b^3*c^5*g*i^3 -
 3*a*b^2*c^4*d*g*i^3 + 3*a^2*b*c^3*d^2*g*i^3 - a^3*c^2*d^3*g*i^3 + (b^3*c^3
*d^2*g*i^3 - 3*a*b^2*c^2*d^3*g*i^3 + 3*a^2*b*c*d^4*g*i^3 - a^3*d^5*g*i^3)*x
^2 + 2*(b^3*c^4*d*g*i^3 - 3*a*b^2*c^3*d^2*g*i^3 + 3*a^2*b*c^2*d^3*g*i^3 - a
^3*c*d^4*g*i^3)*x) + 1/2*A*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c
*d^3 + a^2*d^4)*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3
*x + (b^2*c^4 - 2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^
3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c
)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))
```

mupad [B] time = 6.65, size = 573, normalized size = 2.26

$$\frac{B\,b^2\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\,\left(\frac{c\,g\,i^3\,n\,\left(a\,d-b\,c\right)}{2\,b}-\frac{g\,i^3\,n\,\left(a\,d-b\,c\right)\,\left(a\,d-2\,b\,c\right)}{2\,b^2}+\frac{d\,g\,i^3\,n\,x\,\left(a\,d-b\,c\right)}{b}\right)}{g\,i^3\,n\,\left(a\,d-b\,c\right)\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)\,\left(g\,c^2\,i^3+2\,g\,c\,d\,i^3\,x+g\,d^2\,i^3\,x^2\right)}-\frac{B\,b^2\,{\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)}^2}{2\,g\,i^3\,n\,\left(a\,d-b\,c\right)\,\left(a^2\,d^2-2\,a\,b\,c\,d+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)*(c*i + d*i*x)^3),
x)
```

```
[Out] (b^2*atan((b^2*(A - (3*B*n)/2)*(2*a^3*d^3*g*i^3 + 2*b^3*c^3*g*i^3 - 2*a*b^2
*c^2*d*g*i^3 - 2*a^2*b*c*d^2*g*i^3)*1i)/(g*i^3*(2*A*b^2 - 3*B*b^2*n)*(a*d -
 b*c)^3) + (b^3*d*x*(A - (3*B*n)/2)*(a^2*d^2*g*i^3 + b^2*c^2*g*i^3 - 2*a*b*
c*d*g*i^3)*4i)/(g*i^3*(2*A*b^2 - 3*B*b^2*n)*(a*d - b*c)^3))*(A - (3*B*n)/2)
*2i)/(g*i^3*(a*d - b*c)^3) - ((2*A*a*d - 6*A*b*c - B*a*d*n + 7*B*b*c*n)/(2*
(a*d - b*c)) - (b*x*(2*A*d - 3*B*d*n))/(a*d - b*c))/(x^2*(2*a*d^3*g*i^3 - 2
*b*c*d^2*g*i^3) + x*(4*a*c*d^2*g*i^3 - 4*b*c^2*d*g*i^3) - 2*b*c^3*g*i^3 + 2
*a*c^2*d*g*i^3) - (B*b^2*log(e*((a + b*x)/(c + d*x))^n)^2)/(2*g*i^3*n*(a*d
- b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B*b^2*log(e*((a + b*x)/(c + d*x)
)^n)*((c*g*i^3*n*(a*d - b*c))/(2*b) - (g*i^3*n*(a*d - b*c)*(a*d - 2*b*c))/(
2*b^2) + (d*g*i^3*n*x*(a*d - b*c))/b))/(g*i^3*n*(a*d - b*c)*(a^2*d^2 + b^2*
c^2 - 2*a*b*c*d)*(c^2*g*i^3 + d^2*g*i^3*x^2 + 2*c*d*g*i^3*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

3.156 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^2(ci+dix)^3}\,dx$

Optimal. Leaf size=381

$$-\frac{b^3(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^3(a+bx)(bc-ad)^4}-\frac{3b^2d\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^3(bc-ad)^4}-\frac{d^3(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{2g^2i^3(c+dx)^2(bc-ad)^4}$$

```
[Out] 1/4*B*d^3*n*(b*x+a)^2/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2-3*b*B*d^2*n*(b*x+a)/(-
a*d+b*c)^4/g^2/i^3/(d*x+c)-b^3*B*n*(d*x+c)/(-a*d+b*c)^4/g^2/i^3/(b*x+a)-1/2
*d^3*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^2/i^3/(d*x+c)
^2+3*b*d^2*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^2/i^3/(d*
x+c)-b^3*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^2/i^3/(b*x+
a)-3*b^2*d*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((b*x+a)/(d*x+c))/(-a*d+b*c)^4
/g^2/i^3+3/2*b^2*B*d*n*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^4/g^2/i^3
```

Rubi [C] time = 1.08, antiderivative size = 657, normalized size of antiderivative = 1.72, number of steps used = 30, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{3b^2BdnPolyLog\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^2i^3(bc-ad)^4}-\frac{3b^2BdnPolyLog\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^2i^3(bc-ad)^4}-\frac{3b^2d\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^3(bc-ad)^4}-\frac{b^2\left(\right.}{g^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*i*x)^3
),x]
```

```
[Out] -((b^2*B*n)/((b*c - a*d)^3*g^2*i^3*(a + b*x))) + (B*d*n)/(4*(b*c - a*d)^2*g
^2*i^3*(c + d*x)^2) + (5*b*B*d*n)/(2*(b*c - a*d)^3*g^2*i^3*(c + d*x)) + (3*
b^2*B*d*n*Log[a + b*x])/(2*(b*c - a*d)^4*g^2*i^3) + (3*b^2*B*d*n*Log[a + b*
x]^2)/(2*(b*c - a*d)^4*g^2*i^3) - (b^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n
]))/((b*c - a*d)^3*g^2*i^3*(a + b*x)) - (d*(A + B*Log[e*((a + b*x)/(c + d*x
))^n]))/(2*(b*c - a*d)^2*g^2*i^3*(c + d*x)^2) - (2*b*d*(A + B*Log[e*((a + b
*x)/(c + d*x))^n]))/((b*c - a*d)^3*g^2*i^3*(c + d*x)) - (3*b^2*d*Log[a + b*
x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4*g^2*i^3) - (3*b^2
*B*d*n*Log[c + d*x])/(2*(b*c - a*d)^4*g^2*i^3) - (3*b^2*B*d*n*Log[-((d*(a +
 b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^4*g^2*i^3) + (3*b^2*d*(A +
B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^4*g^2*i^3) + (
3*b^2*B*d*n*Log[c + d*x]^2)/(2*(b*c - a*d)^4*g^2*i^3) - (3*b^2*B*d*n*Log[a
+ b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) - (3*b^2*B*d
*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^2*i^3) - (3*b
^2*B*d*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
```

```
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(156c+156dx)^3(ag+bgx)^2}\,dx=\int\left(\frac{b^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3796416(bc-ad)^3g^2(a+bx)^2}-\frac{b^3d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{1265472(bc-ad)^4g^2(a+bx)}+\frac{d^2}{379}\right.$$

$$=-\frac{\left(b^3d\right)\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}\,dx}{1265472(bc-ad)^4g^2}+\frac{\left(b^2d^2\right)\int\frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}\,dx}{1265472(bc-ad)^4g^2}+\frac{b^3\int\frac{A+B\log}{(a}}{3796416(}$$

$$=-\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3796416(bc-ad)^3g^2(a+bx)}-\frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7592832(bc-ad)^2g^2(c+dx)^2}-\frac{bd\left(A\right.}{18982}$$

$$=-\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3796416(bc-ad)^3g^2(a+bx)}-\frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7592832(bc-ad)^2g^2(c+dx)^2}-\frac{bd\left(A\right.}{18982}$$

$$=-\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3796416(bc-ad)^3g^2(a+bx)}-\frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7592832(bc-ad)^2g^2(c+dx)^2}-\frac{bd\left(A\right.}{18982}$$

$$=-\frac{b^2Bn}{3796416(bc-ad)^3g^2(a+bx)}+\frac{Bdn}{15185664(bc-ad)^2g^2(c+dx)^2}+\frac{}{7592}$$

$$=-\frac{b^2Bn}{3796416(bc-ad)^3g^2(a+bx)}+\frac{Bdn}{15185664(bc-ad)^2g^2(c+dx)^2}+\frac{}{7592}$$

$$=-\frac{b^2Bn}{3796416(bc-ad)^3g^2(a+bx)}+\frac{Bdn}{15185664(bc-ad)^2g^2(c+dx)^2}+\frac{}{7592}$$

Mathematica [C] time = 0.79, size = 477, normalized size = 1.25

$$\frac{-12b^2d\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-\frac{4b^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{a+bx}+12b^2d\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^2*(c*i + d*
i*x)^3),x]
```

```
[Out] ((-4*b^3*B*c*n)/(a + b*x) + (4*a*b^2*B*d*n)/(a + b*x) + (B*d*(b*c - a*d)^2*
n)/(c + d*x)^2 + (8*b^2*B*c*d*n)/(c + d*x) - (8*a*b*B*d^2*n)/(c + d*x) + (2
*b*B*d*(b*c - a*d)*n)/(c + d*x) + 6*b^2*B*d*n*Log[a + b*x] - (4*b^2*(b*c -
a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) - (2*d*(b*c - a*d)^2
*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x)^2 - (8*b*d*(b*c - a*d)*(
A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) - 12*b^2*d*Log[a + b*x]*(A
 + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*b^2*B*d*n*Log[c + d*x] + 12*b^2*d*
(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 6*b^2*B*d*n*(Log[a +
b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a
 + b*x))/(-(b*c) + a*d)]) - 6*b^2*B*d*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d
```

```
)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))
/(4*(b*c - a*d)^4*g^2*i^3)
```

fricas [B] time = 0.98, size = 949, normalized size = 2.49

$$-\frac{4\,Ab^3c^3+6\,Aab^2c^2d-12\,Aa^2bcd^2+2\,Aa^3d^3+6\left(2\,Ab^3cd^2-2\,Aab^2d^3-\left(Bb^3cd^2-Bab^2d^3\right)n\right)x^2+6\left(Bb^3d^3nx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, a
lgorithm="fricas")
```

```
[Out] -1/4*(4*A*b^3*c^3 + 6*A*a*b^2*c^2*d - 12*A*a^2*b*c*d^2 + 2*A*a^3*d^3 + 6*(2
*A*b^3*c*d^2 - 2*A*a*b^2*d^3 - (B*b^3*c*d^2 - B*a*b^2*d^3)*n)*x^2 + 6*(B*b^
3*d^3*n*x^3 + B*a*b^2*c^2*d*n + (2*B*b^3*c*d^2 + B*a*b^2*d^3)*n*x^2 + (B*b^
3*c^2*d + 2*B*a*b^2*c*d^2)*n*x)*log((b*x + a)/(d*x + c))^2 + (4*B*b^3*c^3 -
 15*B*a*b^2*c^2*d + 12*B*a^2*b*c*d^2 - B*a^3*d^3)*n + 3*(6*A*b^3*c^2*d - 4*
A*a*b^2*c*d^2 - 2*A*a^2*b*d^3 - (B*b^3*c^2*d + 2*B*a*b^2*c*d^2 - 3*B*a^2*b*
d^3)*n)*x + 2*(2*B*b^3*c^3 + 3*B*a*b^2*c^2*d - 6*B*a^2*b*c*d^2 + B*a^3*d^3
+ 6*(B*b^3*c*d^2 - B*a*b^2*d^3)*x^2 + 3*(3*B*b^3*c^2*d - 2*B*a*b^2*c*d^2 -
B*a^2*b*d^3)*x + 6*(B*b^3*d^3*x^3 + B*a*b^2*c^2*d + (2*B*b^3*c*d^2 + B*a*b^
2*d^3)*x^2 + (B*b^3*c^2*d + 2*B*a*b^2*c*d^2)*x)*log((b*x + a)/(d*x + c)))*l
og(e) + 2*(6*A*a*b^2*c^2*d - 3*(B*b^3*d^3*n - 2*A*b^3*d^3)*x^3 - 3*(3*B*a*b
^2*d^3*n - 4*A*b^3*c*d^2 - 2*A*a*b^2*d^3)*x^2 + (2*B*b^3*c^3 - 6*B*a^2*b*c*
d^2 + B*a^3*d^3)*n + 3*(2*A*b^3*c^2*d + 4*A*a*b^2*c*d^2 + (2*B*b^3*c^2*d -
4*B*a*b^2*c*d^2 - B*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c)))/((b^5*c^4*d^
2 - 4*a*b^4*c^3*d^3 + 6*a^2*b^3*c^2*d^4 - 4*a^3*b^2*c*d^5 + a^4*b*d^6)*g^2*
i^3*x^3 + (2*b^5*c^5*d - 7*a*b^4*c^4*d^2 + 8*a^2*b^3*c^3*d^3 - 2*a^3*b^2*c^
2*d^4 - 2*a^4*b*c*d^5 + a^5*d^6)*g^2*i^3*x^2 + (b^5*c^6 - 2*a*b^4*c^5*d - 2
*a^2*b^3*c^4*d^2 + 8*a^3*b^2*c^3*d^3 - 7*a^4*b*c^2*d^4 + 2*a^5*c*d^5)*g^2*i
^3*x + (a*b^4*c^6 - 4*a^2*b^3*c^5*d + 6*a^3*b^2*c^4*d^2 - 4*a^4*b*c^3*d^3 +
 a^5*c^2*d^4)*g^2*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{\left(bgx+ag\right)^{2}\left(dix+ci\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x)
```

maxima [B] time = 2.76, size = 1724, normalized size = 4.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x, a
lgorithm="maxima")
```

```
[Out] -1/2*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a
*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g
^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d
^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*
a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a
^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4*a
*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*
d*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^
3 + a^4*d^4)*g^2*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/4*(4*b^3*
c^3 - 15*a*b^2*c^2*d + 12*a^2*b*c*d^2 - a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)
*x^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*
c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a)^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (
2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(d*x + c)^
2 - 3*(b^3*c^2*d + 2*a*b^2*c*d^2 - 3*a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a*b^2*
c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(
b*x + a) + 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (
b^3*c^2*d + 2*a*b^2*c*d^2)*x + 2*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2
+ a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a))*log(d*x + c
))*B*n/(a*b^4*c^6*g^2*i^3 - 4*a^2*b^3*c^5*d*g^2*i^3 + 6*a^3*b^2*c^4*d^2*g^2
*i^3 - 4*a^4*b*c^3*d^3*g^2*i^3 + a^5*c^2*d^4*g^2*i^3 + (b^5*c^4*d^2*g^2*i^3
 - 4*a*b^4*c^3*d^3*g^2*i^3 + 6*a^2*b^3*c^2*d^4*g^2*i^3 - 4*a^3*b^2*c*d^5*g^
2*i^3 + a^4*b*d^6*g^2*i^3)*x^3 + (2*b^5*c^5*d*g^2*i^3 - 7*a*b^4*c^4*d^2*g^2
*i^3 + 8*a^2*b^3*c^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*d^4*g^2*i^3 - 2*a^4*b*c*d^
5*g^2*i^3 + a^5*d^6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i^3 - 2*a*b^4*c^5*d*g^2*i^3
 - 2*a^2*b^3*c^4*d^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*g^2*i^3 - 7*a^4*b*c^2*d^4*
g^2*i^3 + 2*a^5*c*d^5*g^2*i^3)*x) - 1/2*A*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a
*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d
^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*
d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a
*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x +
 (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6
*b^2*d*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b
*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*d*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d
 + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3))
```

mupad [B] time = 7.53, size = 1018, normalized size = 2.67

$$\frac{\frac{4\,A\,b^2\,c^2-2\,A\,a^2\,d^2+B\,a^2\,d^2\,n+4\,B\,b^2\,c^2\,n+10\,A\,a\,b\,c\,d-11\,B\,a\,b\,c\,d\,n}{2\,(a\,d-b\,c)}+\frac{3\,x^2\,\left(2\,A\,b^2\,d\right.}{a\,d-}}{x\,\left(4\,a^3\,c\,d^3\,g^2\,i^3-6\,a^2\,b\,c^2\,d^2\,g^2\,i^3+2\,b^3\,c^4\,g^2\,i^3\right)+x^2\,\left(2\,a^3\,d^4\,g^2\,i^3-6\,a\,b^2\,c^2\,d^2\,g^2\,i^3+4\,b^3\,c^3\,d\,g^2\,i^3\right)+x^3\,\left(2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^2*(c*i + d*i*x)^3
),x)
```

```
[Out] ((4*A*b^2*c^2 - 2*A*a^2*d^2 + B*a^2*d^2*n + 4*B*b^2*c^2*n + 10*A*a*b*c*d -
11*B*a*b*c*d*n)/(2*(a*d - b*c)) + (3*x^2*(2*A*b^2*d^2 - B*b^2*d^2*n))/(a*d
- b*c) + (3*x*(2*A*a*b*d^2 + 6*A*b^2*c*d - 3*B*a*b*d^2*n - B*b^2*c*d*n))/(2
*(a*d - b*c)))/(x*(2*b^3*c^4*g^2*i^3 + 4*a^3*c*d^3*g^2*i^3 - 6*a^2*b*c^2*d^
2*g^2*i^3) + x^2*(2*a^3*d^4*g^2*i^3 + 4*b^3*c^3*d*g^2*i^3 - 6*a*b^2*c^2*d^2
*g^2*i^3) + x^3*(2*b^3*c^2*d^2*g^2*i^3 + 2*a^2*b*d^4*g^2*i^3 - 4*a*b^2*c*d^
3*g^2*i^3) + 2*a^3*c^2*d^2*g^2*i^3 + 2*a*b^2*c^4*g^2*i^3 - 4*a^2*b*c^3*d*g^
2*i^3) - log(e*((a + b*x)/(c + d*x))^n)*(((B*(a*d + 2*b*c))/(2*(a^2*d^2 + b
```

```
^2*c^2 - 2*a*b*c*d)) + (3*B*b*d*x)/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(x*
(b*c^2*g^2*i^3 + 2*a*c*d*g^2*i^3) + x^2*(a*d^2*g^2*i^3 + 2*b*c*d*g^2*i^3) +
 a*c^2*g^2*i^3 + b*d^2*g^2*i^3*x^3) - (3*B*b^2*d*(d*g^2*i^3*n*x^2*(a*d - b*
c) + (a*c*g^2*i^3*n*(a*d - b*c))/b + (g^2*i^3*n*x*(a*d + b*c)*(a*d - b*c))/
b))/(g^2*i^3*n*(a*d - b*c)^4*(x*(b*c^2*g^2*i^3 + 2*a*c*d*g^2*i^3) + x^2*(a*
d^2*g^2*i^3 + 2*b*c*d*g^2*i^3) + a*c^2*g^2*i^3 + b*d^2*g^2*i^3*x^3))) + (b^
2*d*atan((b^2*d*(2*A - B*n)*((a^4*d^4*g^2*i^3 - b^4*c^4*g^2*i^3 + 2*a*b^3*c
^3*d*g^2*i^3 - 2*a^3*b*c*d^3*g^2*i^3)/(a^3*d^3*g^2*i^3 - b^3*c^3*g^2*i^3 +
3*a*b^2*c^2*d*g^2*i^3 - 3*a^2*b*c*d^2*g^2*i^3) + 2*b*d*x)*(a^3*d^3*g^2*i^3
- b^3*c^3*g^2*i^3 + 3*a*b^2*c^2*d*g^2*i^3 - 3*a^2*b*c*d^2*g^2*i^3)*3i)/(g^2
*i^3*(6*A*b^2*d - 3*B*b^2*d*n)*(a*d - b*c)^4))*(2*A - B*n)*3i)/(g^2*i^3*(a*
d - b*c)^4) - (3*B*b^2*d*log(e*((a + b*x)/(c + d*x))^n)^2)/(2*g^2*i^3*n*(a*
d - b*c)^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**2/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

3.157 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^3(ci+dix)^3}\,dx$

Optimal. Leaf size=483

$$-\frac{b^4(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^3i^3(a+bx)^2(bc-ad)^5}+\frac{4b^3d(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^3i^3(a+bx)(bc-ad)^5}+\frac{6b^2d^2\log\left(\frac{a+bx}{c+dx}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{g^3i^3(bc-ad)^5}$$

```
[Out] -1/4*B*d^4*n*(b*x+a)^2/(-a*d+b*c)^5/g^3/i^3/(d*x+c)^2+4*b*B*d^3*n*(b*x+a)/(
-a*d+b*c)^5/g^3/i^3/(d*x+c)+4*b^3*B*d*n*(d*x+c)/(-a*d+b*c)^5/g^3/i^3/(b*x+a
)-1/4*b^4*B*n*(d*x+c)^2/(-a*d+b*c)^5/g^3/i^3/(b*x+a)^2+1/2*d^4*(b*x+a)^2*(A
+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^3/i^3/(d*x+c)^2-4*b*d^3*(b*x+a
)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^3/i^3/(d*x+c)+4*b^3*d*(d*x
+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^3/i^3/(b*x+a)-1/2*b^4*(d
*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^3/i^3/(b*x+a)^2+6*b^
2*d^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((b*x+a)/(d*x+c))/(-a*d+b*c)^5/g^3/
i^3-3*b^2*B*d^2*n*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^5/g^3/i^3
```

Rubi [C] time = 1.39, antiderivative size = 701, normalized size of antiderivative = 1.45, number of steps used = 34, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{6b^2Bd^2n\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{g^3i^3(bc-ad)^5}+\frac{6b^2Bd^2n\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{g^3i^3(bc-ad)^5}+\frac{6b^2d^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^3i^3(bc-ad)^5}-\frac{6b}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*i*x)^3
),x]
```

```
[Out] -(b^2*B*n)/(4*(b*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (7*b^2*B*d*n)/(2*(b*c -
a*d)^4*g^3*i^3*(a + b*x)) - (B*d^2*n)/(4*(b*c - a*d)^3*g^3*i^3*(c + d*x)^2)
 - (7*b*B*d^2*n)/(2*(b*c - a*d)^4*g^3*i^3*(c + d*x)) - (3*b^2*B*d^2*n*Log[a
 + b*x]^2)/((b*c - a*d)^5*g^3*i^3) - (b^2*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n]))/(2*(b*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (3*b^2*d*(A + B*Log[e*((a +
b*x)/(c + d*x))^n]))/((b*c - a*d)^4*g^3*i^3*(a + b*x)) + (d^2*(A + B*Log[e*
((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)^3*g^3*i^3*(c + d*x)^2) + (3*b*d^2
*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4*g^3*i^3*(c + d*x))
+ (6*b^2*d^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a
*d)^5*g^3*i^3) + (6*b^2*B*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d
*x])/((b*c - a*d)^5*g^3*i^3) - (6*b^2*d^2*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n])*Log[c + d*x])/((b*c - a*d)^5*g^3*i^3) - (3*b^2*B*d^2*n*Log[c + d*x]^2
)/((b*c - a*d)^5*g^3*i^3) + (6*b^2*B*d^2*n*Log[a + b*x]*Log[(b*(c + d*x))/(
b*c - a*d)])/((b*c - a*d)^5*g^3*i^3) + (6*b^2*B*d^2*n*PolyLog[2, -((d*(a +
b*x))/(b*c - a*d))])/((b*c - a*d)^5*g^3*i^3) + (6*b^2*B*d^2*n*PolyLog[2, (b
*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^3*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
```

```
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(157c+157dx)^3(ag+bgx)^3}\,dx = \int \left(\frac{b^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3869893(bc-ad)^3g^3(a+bx)^3} - \frac{3b^3d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3869893(bc-ad)^4g^3(a+bx)^2} + \frac{6b}{38}\right.$$

$$= \frac{\left(6b^3d^2\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}\,dx}{3869893(bc-ad)^5g^3} - \frac{\left(6b^2d^3\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}\,dx}{3869893(bc-ad)^5g^3} - \frac{\left(3b^3d\right)\int}{38698}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7739786(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3869893(bc-ad)^4g^3(a+bx)} + \frac{d^2}{77397}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7739786(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3869893(bc-ad)^4g^3(a+bx)} + \frac{d^2}{77397}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7739786(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3869893(bc-ad)^4g^3(a+bx)} + \frac{d^2}{77397}$$

$$= -\frac{b^2Bn}{15479572(bc-ad)^3g^3(a+bx)^2} + \frac{7b^2Bdn}{7739786(bc-ad)^4g^3(a+bx)} - \frac{}{1547}$$

$$= -\frac{b^2Bn}{15479572(bc-ad)^3g^3(a+bx)^2} + \frac{7b^2Bdn}{7739786(bc-ad)^4g^3(a+bx)} - \frac{}{1547}$$

$$= -\frac{b^2Bn}{15479572(bc-ad)^3g^3(a+bx)^2} + \frac{7b^2Bdn}{7739786(bc-ad)^4g^3(a+bx)} - \frac{}{1547}$$

Mathematica [C] time = 1.28, size = 561, normalized size = 1.16

$$-\frac{-24b^2d^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+24b^2d^2\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-\frac{12b^2d(bc-ad)\left(B\log\right.}{a+b}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^3*(c*i + d*
i*x)^3),x]
```

```
[Out] -1/4*((b^2*B*(b*c - a*d)^2*n)/(a + b*x)^2 - (12*b^3*B*c*d*n)/(a + b*x) + (1
2*a*b^2*B*d^2*n)/(a + b*x) - (2*b^2*B*d*(b*c - a*d)*n)/(a + b*x) + (B*d^2*(
b*c - a*d)^2*n)/(c + d*x)^2 + (12*b^2*B*c*d^2*n)/(c + d*x) - (12*a*b*B*d^3*
n)/(c + d*x) + (2*b*B*d^2*(b*c - a*d)*n)/(c + d*x) + (2*b^2*(b*c - a*d)^2*(
A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^2 - (12*b^2*d*(b*c - a*d)*
(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) - (2*d^2*(b*c - a*d)^2*(A
 + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x)^2 - (12*b*d^2*(b*c - a*d)*(
```

```
A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) - 24*b^2*d^2*Log[a + b*x]*
(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 24*b^2*d^2*(A + B*Log[e*((a + b*x)
/(c + d*x))^n])*Log[c + d*x] + 12*b^2*B*d^2*n*(Log[a + b*x]*(Log[a + b*x] -
 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a
*d)]) - 12*b^2*B*d^2*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x]
)*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^5*g
^3*i^3)
```

fricas [B] time = 1.05, size = 1416, normalized size = 2.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, a
lgorithm="fricas")
```

```
[Out] -1/4*(2*A*b^4*c^4 - 16*A*a*b^3*c^3*d + 16*A*a^3*b*c*d^3 - 2*A*a^4*d^4 - 24*
(A*b^4*c*d^3 - A*a*b^3*d^4)*x^3 - 12*(3*A*b^4*c^2*d^2 - 3*A*a^2*b^2*d^4 + (
B*b^4*c^2*d^2 - 2*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*n)*x^2 - 12*(B*b^4*d^4*n*x
^4 + B*a^2*b^2*c^2*d^2*n + 2*(B*b^4*c*d^3 + B*a*b^3*d^4)*n*x^3 + (B*b^4*c^2
*d^2 + 4*B*a*b^3*c*d^3 + B*a^2*b^2*d^4)*n*x^2 + 2*(B*a*b^3*c^2*d^2 + B*a^2*
b^2*c*d^3)*n*x)*log((b*x + a)/(d*x + c))^2 + (B*b^4*c^4 - 16*B*a*b^3*c^3*d
+ 30*B*a^2*b^2*c^2*d^2 - 16*B*a^3*b*c*d^3 + B*a^4*d^4)*n - 4*(2*A*b^4*c^3*d
 + 12*A*a*b^3*c^2*d^2 - 12*A*a^2*b^2*c*d^3 - 2*A*a^3*b*d^4 + 3*(B*b^4*c^3*d
 - B*a*b^3*c^2*d^2 - B*a^2*b^2*c*d^3 + B*a^3*b*d^4)*n)*x + 2*(B*b^4*c^4 - 8
*B*a*b^3*c^3*d + 8*B*a^3*b*c*d^3 - B*a^4*d^4 - 12*(B*b^4*c*d^3 - B*a*b^3*d^
4)*x^3 - 18*(B*b^4*c^2*d^2 - B*a^2*b^2*d^4)*x^2 - 4*(B*b^4*c^3*d + 6*B*a*b^
3*c^2*d^2 - 6*B*a^2*b^2*c*d^3 - B*a^3*b*d^4)*x - 12*(B*b^4*d^4*x^4 + B*a^2*
b^2*c^2*d^2 + 2*(B*b^4*c*d^3 + B*a*b^3*d^4)*x^3 + (B*b^4*c^2*d^2 + 4*B*a*b^
3*c*d^3 + B*a^2*b^2*d^4)*x^2 + 2*(B*a*b^3*c^2*d^2 + B*a^2*b^2*c*d^3)*x)*log
((b*x + a)/(d*x + c)))*log(e) - 2*(12*A*b^4*d^4*x^4 + 12*A*a^2*b^2*c^2*d^2
+ 12*(2*A*b^4*c*d^3 + 2*A*a*b^3*d^4 + (B*b^4*c*d^3 - B*a*b^3*d^4)*n)*x^3 +
6*(2*A*b^4*c^2*d^2 + 8*A*a*b^3*c*d^3 + 2*A*a^2*b^2*d^4 + 3*(B*b^4*c^2*d^2 -
 B*a^2*b^2*d^4)*n)*x^2 - (B*b^4*c^4 - 8*B*a*b^3*c^3*d + 8*B*a^3*b*c*d^3 - B
*a^4*d^4)*n + 4*(6*A*a*b^3*c^2*d^2 + 6*A*a^2*b^2*c*d^3 + (B*b^4*c^3*d + 6*B
*a*b^3*c^2*d^2 - 6*B*a^2*b^2*c*d^3 - B*a^3*b*d^4)*n)*x)*log((b*x + a)/(d*x
+ c)))/((b^7*c^5*d^2 - 5*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 - 10*a^3*b^4*c^
2*d^5 + 5*a^4*b^3*c*d^6 - a^5*b^2*d^7)*g^3*i^3*x^4 + 2*(b^7*c^6*d - 4*a*b^6
*c^5*d^2 + 5*a^2*b^5*c^4*d^3 - 5*a^4*b^3*c^2*d^5 + 4*a^5*b^2*c*d^6 - a^6*b*
d^7)*g^3*i^3*x^3 + (b^7*c^7 - a*b^6*c^6*d - 9*a^2*b^5*c^5*d^2 + 25*a^3*b^4*
c^4*d^3 - 25*a^4*b^3*c^3*d^4 + 9*a^5*b^2*c^2*d^5 + a^6*b*c*d^6 - a^7*d^7)*g
^3*i^3*x^2 + 2*(a*b^6*c^7 - 4*a^2*b^5*c^6*d + 5*a^3*b^4*c^5*d^2 - 5*a^5*b^2
*c^3*d^4 + 4*a^6*b*c^2*d^5 - a^7*c*d^6)*g^3*i^3*x + (a^2*b^5*c^7 - 5*a^3*b^
4*c^6*d + 10*a^4*b^3*c^5*d^2 - 10*a^5*b^2*c^4*d^3 + 5*a^6*b*c^3*d^4 - a^7*c
^2*d^5)*g^3*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln\left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{\left(bgx+ag\right)^{3} \left(dix+ci\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)
```

maxima [B] time = 2.52, size = 2383, normalized size = 4.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x, a
lgorithm="maxima")
```

```
[Out] 1/2*B*((12*b^3*d^3*x^3 - b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^3
+ 18*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d^3
)*x)/((b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^5
+ a^4*b^2*d^6)*g^3*i^3*x^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c^3
*d^3 + 2*a^3*b^3*c^2*d^4 - 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^6*
c^6 - 9*a^2*b^4*c^4*d^2 + 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^6)
*g^3*i^3*x^2 + 2*(a*b^5*c^6 - 3*a^2*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4*b
^2*c^3*d^3 - 3*a^5*b*c^2*d^4 + a^6*c*d^5)*g^3*i^3*x + (a^2*b^4*c^6 - 4*a^3*
b^3*c^5*d + 6*a^4*b^2*c^4*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d^4)*g^3*i^3) + 1
2*b^2*d^2*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*
a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3) - 12*b^2*d^2*log(d*x +
c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*
a^4*b*c*d^4 - a^5*d^5)*g^3*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1
/4*(b^4*c^4 - 16*a*b^3*c^3*d + 30*a^2*b^2*c^2*d^2 - 16*a^3*b*c*d^3 + a^4*d^
4 - 12*(b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 12*(b^4*d^4*x^4 +
a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*
d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)^
2 - 24*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^
4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c
*d^3)*x)*log(b*x + a)*log(d*x + c) + 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*
(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x
^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(d*x + c)^2 - 12*(b^4*c^3*d -
a*b^3*c^2*d^2 - a^2*b^2*c*d^3 + a^3*b*d^4)*x)*B*n/(a^2*b^5*c^7*g^3*i^3 - 5*
a^3*b^4*c^6*d*g^3*i^3 + 10*a^4*b^3*c^5*d^2*g^3*i^3 - 10*a^5*b^2*c^4*d^3*g^3
*i^3 + 5*a^6*b*c^3*d^4*g^3*i^3 - a^7*c^2*d^5*g^3*i^3 + (b^7*c^5*d^2*g^3*i^3
 - 5*a*b^6*c^4*d^3*g^3*i^3 + 10*a^2*b^5*c^3*d^4*g^3*i^3 - 10*a^3*b^4*c^2*d^
5*g^3*i^3 + 5*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^3*i^3)*x^4 + 2*(b^7*c^6
*d*g^3*i^3 - 4*a*b^6*c^5*d^2*g^3*i^3 + 5*a^2*b^5*c^4*d^3*g^3*i^3 - 5*a^4*b^
3*c^2*d^5*g^3*i^3 + 4*a^5*b^2*c*d^6*g^3*i^3 - a^6*b*d^7*g^3*i^3)*x^3 + (b^7
*c^7*g^3*i^3 - a*b^6*c^6*d*g^3*i^3 - 9*a^2*b^5*c^5*d^2*g^3*i^3 + 25*a^3*b^4
*c^4*d^3*g^3*i^3 - 25*a^4*b^3*c^3*d^4*g^3*i^3 + 9*a^5*b^2*c^2*d^5*g^3*i^3 +
 a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*x^2 + 2*(a*b^6*c^7*g^3*i^3 - 4*a^2*
b^5*c^6*d*g^3*i^3 + 5*a^3*b^4*c^5*d^2*g^3*i^3 - 5*a^5*b^2*c^3*d^4*g^3*i^3 +
 4*a^6*b*c^2*d^5*g^3*i^3 - a^7*c*d^6*g^3*i^3)*x) + 1/2*A*((12*b^3*d^3*x^3 -
 b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^3 + 18*(b^3*c*d^2 + a*b^2*
d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d^3)*x)/((b^6*c^4*d^2 - 4*a
*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^5 + a^4*b^2*d^6)*g^3*i^3*x
^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c^3*d^3 + 2*a^3*b^3*c^2*d^4
 - 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^6*c^6 - 9*a^2*b^4*c^4*d^2
+ 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^6)*g^3*i^3*x^2 + 2*(a*b^5*
c^6 - 3*a^2*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4*b^2*c^3*d^3 - 3*a^5*b*c^2
*d^4 + a^6*c*d^5)*g^3*i^3*x + (a^2*b^4*c^6 - 4*a^3*b^3*c^5*d + 6*a^4*b^2*c^
4*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d^4)*g^3*i^3) + 12*b^2*d^2*log(b*x + a)/(
(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*
b*c*d^4 - a^5*d^5)*g^3*i^3) - 12*b^2*d^2*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c
^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g
^3*i^3))
```

mupad [B] time = 7.93, size = 1341, normalized size = 2.78

$$\frac{2\,x\,\big(2\,A\,a^2\,b \cdots}{x^4\,\left(2\,a^3\,b^2\,d^5\,g^3\,i^3-6\,a^2\,b^3\,c\,d^4\,g^3\,i^3+6\,a\,b^4\,c^2\,d^3\,g^3\,i^3-2\,b^5\,c^3\,d^2\,g^3\,i^3\right)-x\,\left(-4\,a^5\,c\,d^4\,g^3\,i^3+8\,a^4\,b\,c^2\,d^3\,g^3\,i^3-\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^3*(c*i + d*i*x)^3
),x)
```

```
[Out] ((2*x*(2*A*a^2*b*d^3 + 2*A*b^3*c^2*d + 14*A*a*b^2*c*d^2 - 3*B*a^2*b*d^3*n +
 3*B*b^3*c^2*d*n))/(a*d - b*c) - (2*A*a^3*d^3 + 2*A*b^3*c^3 - B*a^3*d^3*n +
 B*b^3*c^3*n - 14*A*a*b^2*c^2*d - 14*A*a^2*b*c*d^2 - 15*B*a*b^2*c^2*d*n + 1
5*B*a^2*b*c*d^2*n)/(2*(a*d - b*c)) + (6*x^2*(3*A*a*b^2*d^3 + 3*A*b^3*c*d^2
- B*a*b^2*d^3*n + B*b^3*c*d^2*n))/(a*d - b*c) + (12*A*b^3*d^3*x^3)/(a*d - b
*c))/(x^4*(2*a^3*b^2*d^5*g^3*i^3 - 2*b^5*c^3*d^2*g^3*i^3 + 6*a*b^4*c^2*d^3*
g^3*i^3 - 6*a^2*b^3*c*d^4*g^3*i^3) - x*(4*a*b^4*c^5*g^3*i^3 - 4*a^5*c*d^4*g
^3*i^3 - 8*a^2*b^3*c^4*d*g^3*i^3 + 8*a^4*b*c^2*d^3*g^3*i^3) + x^3*(4*a^4*b*
d^5*g^3*i^3 - 4*b^5*c^4*d*g^3*i^3 + 8*a*b^4*c^3*d^2*g^3*i^3 - 8*a^3*b^2*c*d
^4*g^3*i^3) + x^2*(2*a^5*d^5*g^3*i^3 - 2*b^5*c^5*g^3*i^3 - 2*a*b^4*c^4*d*g^
3*i^3 + 2*a^4*b*c*d^4*g^3*i^3 + 16*a^2*b^3*c^3*d^2*g^3*i^3 - 16*a^3*b^2*c^2
*d^3*g^3*i^3) - 2*a^2*b^3*c^5*g^3*i^3 + 2*a^5*c^2*d^3*g^3*i^3 + 6*a^3*b^2*c
^4*d*g^3*i^3 - 6*a^4*b*c^3*d^2*g^3*i^3) + (log(e*((a + b*x)/(c + d*x))^n)*(
x*((3*B*b*d*(a*d + b*c)^2)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2 - (B*b*d)/(a^2
*d^2 + b^2*c^2 - 2*a*b*c*d) + (6*B*a*b^2*c*d^2)/(a^2*d^2 + b^2*c^2 - 2*a*b*
c*d)^2) - (B*(a*d + b*c))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (6*B*b^3*d^
3*x^3)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2 + (9*B*b^2*d^2*x^2*(a*d + b*c))/(a
^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2 + (3*B*a*b*c*d*(a*d + b*c))/(a^2*d^2 + b^2*
c^2 - 2*a*b*c*d)^2))/(x*(2*a*b*c^2*g^3*i^3 + 2*a^2*c*d*g^3*i^3) + x^3*(2*a*
b*d^2*g^3*i^3 + 2*b^2*c*d*g^3*i^3) + x^2*(a^2*d^2*g^3*i^3 + b^2*c^2*g^3*i^3
 + 4*a*b*c*d*g^3*i^3) + a^2*c^2*g^3*i^3 + b^2*d^2*g^3*i^3*x^4) + (A*b^2*d^2
*atan(((a^5*d^5*g^3*i^3 + b^5*c^5*g^3*i^3 - 3*a*b^4*c^4*d*g^3*i^3 - 3*a^4*b
*c*d^4*g^3*i^3 + 2*a^2*b^3*c^3*d^2*g^3*i^3 + 2*a^3*b^2*c^2*d^3*g^3*i^3)*1i)
/(g^3*i^3*(a*d - b*c)^5) + (b*d*x*(a^4*d^4*g^3*i^3 + b^4*c^4*g^3*i^3 - 4*a*
b^3*c^3*d*g^3*i^3 - 4*a^3*b*c*d^3*g^3*i^3 + 6*a^2*b^2*c^2*d^2*g^3*i^3)*2i)/
(g^3*i^3*(a*d - b*c)^5))*12i)/(g^3*i^3*(a*d - b*c)^5) - (3*B*b^2*d^2*log(e*
((a + b*x)/(c + d*x))^n)^2)/(g^3*i^3*n*(a*d - b*c)^5)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**3/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

3.158 $\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(ag+bgx)^4(ci+dix)^3}\,dx$

Optimal. Leaf size=587

$$-\frac{b^5(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3g^4i^3(a+bx)^3(bc-ad)^6}+\frac{5b^4d(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^4i^3(a+bx)^2(bc-ad)^6}-\frac{10b^3d^2(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{g^4i^3(a+bx)(bc-ad)^6}$$

```
[Out] 1/4*B*d^5*n*(b*x+a)^2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2-5*b*B*d^4*n*(b*x+a)/(-
a*d+b*c)^6/g^4/i^3/(d*x+c)-10*b^3*B*d^2*n*(d*x+c)/(-a*d+b*c)^6/g^4/i^3/(b*x
+a)+5/4*b^4*B*d*n*(d*x+c)^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-1/9*b^5*B*n*(d*x
+c)^3/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^3-1/2*d^5*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(
d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2+5*b*d^4*(b*x+a)*(A+B*ln(e*((b*x+
a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(d*x+c)-10*b^3*d^2*(d*x+c)*(A+B*ln(e*(
(b*x+a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/2*b^4*d*(d*x+c)^2*(A+B*
ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-1/3*b^5*(d*x+c)^3
*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^3-10*b^2*d^3*
(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((b*x+a)/(d*x+c))/(-a*d+b*c)^6/g^4/i^3+5*
b^2*B*d^3*n*ln((b*x+a)/(d*x+c))^2/(-a*d+b*c)^6/g^4/i^3
```

Rubi [C] time = 1.69, antiderivative size = 859, normalized size of antiderivative = 1.46, number of steps used = 38, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{5b^2Bn\log^2(a+bx)d^3}{(bc-ad)^6g^4i^3}+\frac{5b^2Bn\log^2(c+dx)d^3}{(bc-ad)^6g^4i^3}-\frac{10b^2Bn\log(a+bx)d^3}{3(bc-ad)^6g^4i^3}-\frac{10b^2\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{(bc-ad)^6g^4i^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*i*x)^3
),x]
```

```
[Out] -(b^2*B*n)/(9*(b*c - a*d)^3*g^4*i^3*(a + b*x)^3) + (11*b^2*B*d*n)/(12*(b*c
- a*d)^4*g^4*i^3*(a + b*x)^2) - (47*b^2*B*d^2*n)/(6*(b*c - a*d)^5*g^4*i^3*(
a + b*x)) + (B*d^3*n)/(4*(b*c - a*d)^4*g^4*i^3*(c + d*x)^2) + (9*b*B*d^3*n)
/(2*(b*c - a*d)^5*g^4*i^3*(c + d*x)) - (10*b^2*B*d^3*n*Log[a + b*x])/(3*(b*
c - a*d)^6*g^4*i^3) + (5*b^2*B*d^3*n*Log[a + b*x]^2)/((b*c - a*d)^6*g^4*i^3
) - (b^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*(b*c - a*d)^3*g^4*i^3*(
a + b*x)^3) + (3*b^2*d*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*
d)^4*g^4*i^3*(a + b*x)^2) - (6*b^2*d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n
]))/((b*c - a*d)^5*g^4*i^3*(a + b*x)) - (d^3*(A + B*Log[e*((a + b*x)/(c + d
*x))^n]))/(2*(b*c - a*d)^4*g^4*i^3*(c + d*x)^2) - (4*b*d^3*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n]))/((b*c - a*d)^5*g^4*i^3*(c + d*x)) - (10*b^2*d^3*Log
[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^6*g^4*i^3) +
 (10*b^2*B*d^3*n*Log[c + d*x])/(3*(b*c - a*d)^6*g^4*i^3) - (10*b^2*B*d^3*n*
Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3) + (
10*b^2*d^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d
)^6*g^4*i^3) + (5*b^2*B*d^3*n*Log[c + d*x]^2)/((b*c - a*d)^6*g^4*i^3) - (10
*b^2*B*d^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^6*g^
4*i^3) - (10*b^2*B*d^3*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c -
a*d)^6*g^4*i^3) - (10*b^2*B*d^3*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((
b*c - a*d)^6*g^4*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(158c+158dx)^3(ag+bgx)^4}\,dx = \int \left(\frac{b^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3944312(bc-ad)^3g^4(a+bx)^4} - \frac{3b^3d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{3944312(bc-ad)^4g^4(a+bx)^3} + \frac{3b}{19}\right.$$

$$= -\frac{\left(5b^3d^3\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{a+bx}\,dx}{1972156(bc-ad)^6g^4} + \frac{\left(5b^2d^4\right)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{c+dx}\,dx}{1972156(bc-ad)^6g^4} + \frac{\left(3b^3d^2\right)}{197}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{11832936(bc-ad)^3g^4(a+bx)^3} + \frac{3b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7888624(bc-ad)^4g^4(a+bx)^2} - \frac{3b^2}{197}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{11832936(bc-ad)^3g^4(a+bx)^3} + \frac{3b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7888624(bc-ad)^4g^4(a+bx)^2} - \frac{3b^2}{197}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{11832936(bc-ad)^3g^4(a+bx)^3} + \frac{3b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{7888624(bc-ad)^4g^4(a+bx)^2} - \frac{3b^2}{197}$$

$$= -\frac{b^2Bn}{35498808(bc-ad)^3g^4(a+bx)^3} + \frac{11b^2Bdn}{47331744(bc-ad)^4g^4(a+bx)^2} - \frac{}{23}$$

$$= -\frac{b^2Bn}{35498808(bc-ad)^3g^4(a+bx)^3} + \frac{11b^2Bdn}{47331744(bc-ad)^4g^4(a+bx)^2} - \frac{}{23}$$

$$= -\frac{b^2Bn}{35498808(bc-ad)^3g^4(a+bx)^3} + \frac{11b^2Bdn}{47331744(bc-ad)^4g^4(a+bx)^2} - \frac{}{23}$$

Mathematica [C] time = 2.03, size = 671, normalized size = 1.14

$$-\frac{360b^2d^3\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) - 360b^2d^3\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right) + \frac{216b^2d^2(bc-ad)\left(B\right.}{a+}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])/((a*g + b*g*x)^4*(c*i + d*
i*x)^3),x]
```

```
[Out] -1/36*((4*b^2*B*(b*c - a*d)^3*n)/(a + b*x)^3 - (33*b^2*B*d*(b*c - a*d)^2*n)
/(a + b*x)^2 + (216*b^3*B*c*d^2*n)/(a + b*x) - (216*a*b^2*B*d^3*n)/(a + b*x
) + (66*b^2*B*d^2*(b*c - a*d)*n)/(a + b*x) - (9*B*d^3*(b*c - a*d)^2*n)/(c +
```

```
d*x)^2 - (144*b^2*B*c*d^3*n)/(c + d*x) + (144*a*b*B*d^4*n)/(c + d*x) - (18
*b*B*d^3*(b*c - a*d)*n)/(c + d*x) + 120*b^2*B*d^3*n*Log[a + b*x] + (12*b^2*
(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^3 - (54*b^2
*d*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x)^2 + (216
*b^2*d^2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(a + b*x) + (1
8*d^3*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x)^2 + (
144*b*d^3*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(c + d*x) + 3
60*b^2*d^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 120*b^2*B*
d^3*n*Log[c + d*x] - 360*b^2*d^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log
[c + d*x] - 180*b^2*B*d^3*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x
))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 180*b^2*B*
d^3*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] +
2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^6*g^4*i^3)
```

fricas [**B**] time = 1.01, size = 2181, normalized size = 3.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, a
lgorithm="fricas")
```

```
[Out] -1/36*(12*A*b^5*c^5 - 90*A*a*b^4*c^4*d + 360*A*a^2*b^3*c^3*d^2 - 120*A*a^3*
b^2*c^2*d^3 - 180*A*a^4*b*c*d^4 + 18*A*a^5*d^5 + 120*(3*A*b^5*c*d^4 - 3*A*a
*b^4*d^5 + (B*b^5*c*d^4 - B*a*b^4*d^5)*n)*x^4 + 60*(9*A*b^5*c^2*d^3 + 6*A*a
*b^4*c*d^4 - 15*A*a^2*b^3*d^5 + 2*(3*B*b^5*c^2*d^3 - 2*B*a*b^4*c*d^4 - B*a^
2*b^3*d^5)*n)*x^3 + 20*(6*A*b^5*c^3*d^2 + 63*A*a*b^4*c^2*d^3 - 36*A*a^2*b^3
*c*d^4 - 33*A*a^3*b^2*d^5 + (11*B*b^5*c^3*d^2 + 21*B*a*b^4*c^2*d^3 - 39*B*a
^2*b^3*c*d^4 + 7*B*a^3*b^2*d^5)*n)*x^2 + 180*(B*b^5*d^5*n*x^5 + B*a^3*b^2*c
^2*d^3*n + (2*B*b^5*c*d^4 + 3*B*a*b^4*d^5)*n*x^4 + (B*b^5*c^2*d^3 + 6*B*a*b
^4*c*d^4 + 3*B*a^2*b^3*d^5)*n*x^3 + (3*B*a*b^4*c^2*d^3 + 6*B*a^2*b^3*c*d^4
+ B*a^3*b^2*d^5)*n*x^2 + (3*B*a^2*b^3*c^2*d^3 + 2*B*a^3*b^2*c*d^4)*n*x)*log
((b*x + a)/(d*x + c))^2 + (4*B*b^5*c^5 - 45*B*a*b^4*c^4*d + 360*B*a^2*b^3*c
^3*d^2 - 490*B*a^3*b^2*c^2*d^3 + 180*B*a^4*b*c*d^4 - 9*B*a^5*d^5)*n - 5*(6*
A*b^5*c^4*d - 72*A*a*b^4*c^3*d^2 - 144*A*a^2*b^3*c^2*d^3 + 192*A*a^3*b^2*c*
d^4 + 18*A*a^4*b*d^5 + (5*B*b^5*c^4*d - 108*B*a*b^4*c^3*d^2 + 78*B*a^2*b^3*
c^2*d^3 + 52*B*a^3*b^2*c*d^4 - 27*B*a^4*b*d^5)*n)*x + 6*(2*B*b^5*c^5 - 15*B
*a*b^4*c^4*d + 60*B*a^2*b^3*c^3*d^2 - 20*B*a^3*b^2*c^2*d^3 - 30*B*a^4*b*c*d
^4 + 3*B*a^5*d^5 + 60*(B*b^5*c*d^4 - B*a*b^4*d^5)*x^4 + 30*(3*B*b^5*c^2*d^3
 + 2*B*a*b^4*c*d^4 - 5*B*a^2*b^3*d^5)*x^3 + 10*(2*B*b^5*c^3*d^2 + 21*B*a*b^
4*c^2*d^3 - 12*B*a^2*b^3*c*d^4 - 11*B*a^3*b^2*d^5)*x^2 - 5*(B*b^5*c^4*d - 1
2*B*a*b^4*c^3*d^2 - 24*B*a^2*b^3*c^2*d^3 + 32*B*a^3*b^2*c*d^4 + 3*B*a^4*b*d
^5)*x + 60*(B*b^5*d^5*x^5 + B*a^3*b^2*c^2*d^3 + (2*B*b^5*c*d^4 + 3*B*a*b^4*
d^5)*x^4 + (B*b^5*c^2*d^3 + 6*B*a*b^4*c*d^4 + 3*B*a^2*b^3*d^5)*x^3 + (3*B*a
*b^4*c^2*d^3 + 6*B*a^2*b^3*c*d^4 + B*a^3*b^2*d^5)*x^2 + (3*B*a^2*b^3*c^2*d^
3 + 2*B*a^3*b^2*c*d^4)*x)*log((b*x + a)/(d*x + c)))*log(e) + 6*(60*A*a^3*b^
2*c^2*d^3 + 20*(B*b^5*d^5*n + 3*A*b^5*d^5)*x^5 + 20*(5*B*b^5*c*d^4*n + 6*A*
b^5*c*d^4 + 9*A*a*b^4*d^5)*x^4 + 10*(6*A*b^5*c^2*d^3 + 36*A*a*b^4*c*d^4 + 1
8*A*a^2*b^3*d^5 + (11*B*b^5*c^2*d^3 + 18*B*a*b^4*c*d^4 - 9*B*a^2*b^3*d^5)*n
)*x^3 + 10*(18*A*a*b^4*c^2*d^3 + 36*A*a^2*b^3*c*d^4 + 6*A*a^3*b^2*d^5 + (2*
B*b^5*c^3*d^2 + 27*B*a*b^4*c^2*d^3 - 9*B*a^3*b^2*d^5)*n)*x^2 + (2*B*b^5*c^5
 - 15*B*a*b^4*c^4*d + 60*B*a^2*b^3*c^3*d^2 - 30*B*a^4*b*c*d^4 + 3*B*a^5*d^5
)*n + 5*(36*A*a^2*b^3*c^2*d^3 + 24*A*a^3*b^2*c*d^4 - (B*b^5*c^4*d - 12*B*a*
b^4*c^3*d^2 - 36*B*a^2*b^3*c^2*d^3 + 24*B*a^3*b^2*c*d^4 + 3*B*a^4*b*d^5)*n)
*x)*log((b*x + a)/(d*x + c)))/((b^9*c^6*d^2 - 6*a*b^8*c^5*d^3 + 15*a^2*b^7*
c^4*d^4 - 20*a^3*b^6*c^3*d^5 + 15*a^4*b^5*c^2*d^6 - 6*a^5*b^4*c*d^7 + a^6*b
^3*d^8)*g^4*i^3*x^5 + (2*b^9*c^7*d - 9*a*b^8*c^6*d^2 + 12*a^2*b^7*c^5*d^3 +
 5*a^3*b^6*c^4*d^4 - 30*a^4*b^5*c^3*d^5 + 33*a^5*b^4*c^2*d^6 - 16*a^6*b^3*c
*d^7 + 3*a^7*b^2*d^8)*g^4*i^3*x^4 + (b^9*c^8 - 18*a^2*b^7*c^6*d^2 + 52*a^3*
b^6*c^5*d^3 - 60*a^4*b^5*c^4*d^4 + 24*a^5*b^4*c^3*d^5 + 10*a^6*b^3*c^2*d^6
```

```
- 12*a^7*b^2*c*d^7 + 3*a^8*b*d^8)*g^4*i^3*x^3 + (3*a*b^8*c^8 - 12*a^2*b^7*c
^7*d + 10*a^3*b^6*c^6*d^2 + 24*a^4*b^5*c^5*d^3 - 60*a^5*b^4*c^4*d^4 + 52*a^
6*b^3*c^3*d^5 - 18*a^7*b^2*c^2*d^6 + a^9*d^8)*g^4*i^3*x^2 + (3*a^2*b^7*c^8
- 16*a^3*b^6*c^7*d + 33*a^4*b^5*c^6*d^2 - 30*a^5*b^4*c^5*d^3 + 5*a^6*b^3*c^
4*d^4 + 12*a^7*b^2*c^3*d^5 - 9*a^8*b*c^2*d^6 + 2*a^9*c*d^7)*g^4*i^3*x + (a^
3*b^6*c^8 - 6*a^4*b^5*c^7*d + 15*a^5*b^4*c^6*d^2 - 20*a^6*b^3*c^5*d^3 + 15*
a^7*b^2*c^4*d^4 - 6*a^8*b*c^3*d^5 + a^9*c^2*d^6)*g^4*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{B \ln \left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}{\left(bgx+ag\right)^{4} \left(dix+ci\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)
```

maxima [B] time = 4.95, size = 3819, normalized size = 6.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x, a
lgorithm="maxima")
```

```
[Out] -1/6*B*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2*c^2*d^2 +
 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 + 10*(2*b^
4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - 11*a*b^3*
c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2 - 5*a*b^7*c^4*d^
3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d^7
)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a^3
*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4*i
^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3 -
 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^4*
i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c^4
*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g^4
*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 - 10*a^5*
b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*g^4*i^3*x
+ (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^3
+ 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*x + a)/((b^6*c
^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c
^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x + c)/((b^6*
c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*
c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))*log(e*(b*x/(d*x + c) + a/(d*x
+ c))^n) - 1/36*(4*b^5*c^5 - 45*a*b^4*c^4*d + 360*a^2*b^3*c^3*d^2 - 490*a^3
*b^2*c^2*d^3 + 180*a^4*b*c*d^4 - 9*a^5*d^5 + 120*(b^5*c*d^4 - a*b^4*d^5)*x^
```

```
4 + 120*(3*b^5*c^2*d^3 - 2*a*b^4*c*d^4 - a^2*b^3*d^5)*x^3 + 20*(11*b^5*c^3*
d^2 + 21*a*b^4*c^2*d^3 - 39*a^2*b^3*c*d^4 + 7*a^3*b^2*d^5)*x^2 - 180*(b^5*d
^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 +
 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 +
a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a)^2
- 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b
^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*
b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log
(d*x + c)^2 - 5*(5*b^5*c^4*d - 108*a*b^4*c^3*d^2 + 78*a^2*b^3*c^2*d^3 + 52*
a^3*b^2*c*d^4 - 27*a^4*b*d^5)*x + 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b
^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)
*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c
^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a) - 120*(b^5*d^5*x^5 + a^3*b^2*c^2*
d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^
2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3
*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x - 3*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 +
(2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*
d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b
^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a))*log(d*x + c))*B*n/(a^3*b^6*c
^8*g^4*i^3 - 6*a^4*b^5*c^7*d*g^4*i^3 + 15*a^5*b^4*c^6*d^2*g^4*i^3 - 20*a^6*
b^3*c^5*d^3*g^4*i^3 + 15*a^7*b^2*c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*d^5*g^4*i^3
+ a^9*c^2*d^6*g^4*i^3 + (b^9*c^6*d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*g^4*i^3 + 15
*a^2*b^7*c^4*d^4*g^4*i^3 - 20*a^3*b^6*c^3*d^5*g^4*i^3 + 15*a^4*b^5*c^2*d^6*
g^4*i^3 - 6*a^5*b^4*c*d^7*g^4*i^3 + a^6*b^3*d^8*g^4*i^3)*x^5 + (2*b^9*c^7*d
*g^4*i^3 - 9*a*b^8*c^6*d^2*g^4*i^3 + 12*a^2*b^7*c^5*d^3*g^4*i^3 + 5*a^3*b^6
*c^4*d^4*g^4*i^3 - 30*a^4*b^5*c^3*d^5*g^4*i^3 + 33*a^5*b^4*c^2*d^6*g^4*i^3
- 16*a^6*b^3*c*d^7*g^4*i^3 + 3*a^7*b^2*d^8*g^4*i^3)*x^4 + (b^9*c^8*g^4*i^3
- 18*a^2*b^7*c^6*d^2*g^4*i^3 + 52*a^3*b^6*c^5*d^3*g^4*i^3 - 60*a^4*b^5*c^4*
d^4*g^4*i^3 + 24*a^5*b^4*c^3*d^5*g^4*i^3 + 10*a^6*b^3*c^2*d^6*g^4*i^3 - 12*
a^7*b^2*c*d^7*g^4*i^3 + 3*a^8*b*d^8*g^4*i^3)*x^3 + (3*a*b^8*c^8*g^4*i^3 - 1
2*a^2*b^7*c^7*d*g^4*i^3 + 10*a^3*b^6*c^6*d^2*g^4*i^3 + 24*a^4*b^5*c^5*d^3*g
^4*i^3 - 60*a^5*b^4*c^4*d^4*g^4*i^3 + 52*a^6*b^3*c^3*d^5*g^4*i^3 - 18*a^7*b
^2*c^2*d^6*g^4*i^3 + a^9*d^8*g^4*i^3)*x^2 + (3*a^2*b^7*c^8*g^4*i^3 - 16*a^3
*b^6*c^7*d*g^4*i^3 + 33*a^4*b^5*c^6*d^2*g^4*i^3 - 30*a^5*b^4*c^5*d^3*g^4*i^
3 + 5*a^6*b^3*c^4*d^4*g^4*i^3 + 12*a^7*b^2*c^3*d^5*g^4*i^3 - 9*a^8*b*c^2*d^
6*g^4*i^3 + 2*a^9*c*d^7*g^4*i^3)*x) - 1/6*A*((60*b^4*d^4*x^4 + 2*b^4*c^4 -
13*a*b^3*c^3*d + 47*a^2*b^2*c^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^
4*c*d^3 + 5*a*b^3*d^4)*x^3 + 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^
2*d^4)*x^2 - 5*(b^4*c^3*d - 11*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d
^4)*x)/((b^8*c^5*d^2 - 5*a*b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^
2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7
*c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13
*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a
^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5
+ 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6
*d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2
*c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5
*c^6*d + 20*a^4*b^4*c^5*d^2 - 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^
7*b*c^2*d^5 - 2*a^8*c*d^6)*g^4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*
a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i
^3) + 60*b^2*d^3*log(b*x + a)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^
2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*
i^3) - 60*b^2*d^3*log(d*x + c)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d
^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4
*i^3))
```

mupad [**B**] time = 10.22, size = 2400, normalized size = 4.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))/((a*g + b*g*x)^4*(c*i + d*i*x)^3
),x)
```

```
[Out] log(e*((a + b*x)/(c + d*x))^n)*((x*((5*B*(2*a*b*d^2 + b^2*c*d)*(a*d + b*c))
/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - (5*B*b*d)/(6*(a^2*d^2 + b^2*c^2 -
2*a*b*c*d)) + (5*B*a*b^2*c*d^2)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + x^2*((
5*B*b*d*(2*a*b*d^2 + b^2*c*d))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (5*B
*b^2*d^2*(a*d + b*c))/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - (B*(3*a*d + 2*b*
c))/(6*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (5*B*a*c*(2*a*b*d^2 + b^2*c*d))/(
3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (5*B*b^3*d^3*x^3)/(a^2*d^2 + b^2*c^2
 - 2*a*b*c*d)^2)/(x*(2*a^3*c*d*g^4*i^3 + 3*a^2*b*c^2*g^4*i^3) + x^2*(a^3*d^
2*g^4*i^3 + 3*a*b^2*c^2*g^4*i^3 + 6*a^2*b*c*d*g^4*i^3) + x^3*(b^3*c^2*g^4*i
^3 + 3*a^2*b*d^2*g^4*i^3 + 6*a*b^2*c*d*g^4*i^3) + x^4*(2*b^3*c*d*g^4*i^3 +
3*a*b^2*d^2*g^4*i^3) + a^3*c^2*g^4*i^3 + b^3*d^2*g^4*i^3*x^5) + (10*B*b^2*d
^3*(x^2*((g^4*i^3*n*(a*d + b*c)^2*(a*d - b*c))/d + 2*a*b*c*g^4*i^3*n*(a*d -
 b*c)) + b^2*d*g^4*i^3*n*x^4*(a*d - b*c) + (a^2*c^2*g^4*i^3*n*(a*d - b*c))/
d + 2*b*g^4*i^3*n*x^3*(a*d + b*c)*(a*d - b*c) + (2*a*c*g^4*i^3*n*x*(a*d + b
*c)*(a*d - b*c))/d))/(g^4*i^3*n*(a*d - b*c)^6*(x*(2*a^3*c*d*g^4*i^3 + 3*a^2
*b*c^2*g^4*i^3) + x^2*(a^3*d^2*g^4*i^3 + 3*a*b^2*c^2*g^4*i^3 + 6*a^2*b*c*d*
g^4*i^3) + x^3*(b^3*c^2*g^4*i^3 + 3*a^2*b*d^2*g^4*i^3 + 6*a*b^2*c*d*g^4*i^3
) + x^4*(2*b^3*c*d*g^4*i^3 + 3*a*b^2*d^2*g^4*i^3) + a^3*c^2*g^4*i^3 + b^3*d
^2*g^4*i^3*x^5))) + ((12*A*b^4*c^4 - 18*A*a^4*d^4 + 9*B*a^4*d^4*n + 4*B*b^4
*c^4*n + 282*A*a^2*b^2*c^2*d^2 - 78*A*a*b^3*c^3*d + 162*A*a^3*b*c*d^3 + 319
*B*a^2*b^2*c^2*d^2*n - 41*B*a*b^3*c^3*d*n - 171*B*a^3*b*c*d^3*n)/(6*(a*d -
b*c)) + (5*x*(18*A*a^3*b*d^4 - 6*A*b^4*c^3*d + 66*A*a*b^3*c^2*d^2 + 210*A*a
^2*b^2*c*d^3 - 27*B*a^3*b*d^4*n - 5*B*b^4*c^3*d*n + 103*B*a*b^3*c^2*d^2*n +
 25*B*a^2*b^2*c*d^3*n))/(6*(a*d - b*c)) + (20*x^4*(3*A*b^4*d^4 + B*b^4*d^4*
n))/(a*d - b*c) + (10*x^2*(33*A*a^2*b^2*d^4 + 6*A*b^4*c^2*d^2 - 7*B*a^2*b^2
*d^4*n + 11*B*b^4*c^2*d^2*n + 69*A*a*b^3*c*d^3 + 32*B*a*b^3*c*d^3*n))/(3*(a
*d - b*c)) + (10*x^3*(15*A*a*b^3*d^4 + 9*A*b^4*c*d^3 + 2*B*a*b^3*d^4*n + 6*
B*b^4*c*d^3*n))/(a*d - b*c))/(x^5*(6*a^4*b^3*d^6*g^4*i^3 + 6*b^7*c^4*d^2*g^
4*i^3 - 24*a*b^6*c^3*d^3*g^4*i^3 - 24*a^3*b^4*c*d^5*g^4*i^3 + 36*a^2*b^5*c^
2*d^4*g^4*i^3) + x*(18*a^2*b^5*c^6*g^4*i^3 + 12*a^7*c*d^5*g^4*i^3 - 60*a^3*
b^4*c^5*d*g^4*i^3 - 30*a^6*b*c^2*d^4*g^4*i^3 + 60*a^4*b^3*c^4*d^2*g^4*i^3)
+ x^2*(6*a^7*d^6*g^4*i^3 + 18*a*b^6*c^6*g^4*i^3 + 12*a^6*b*c*d^5*g^4*i^3 -
36*a^2*b^5*c^5*d*g^4*i^3 - 30*a^3*b^4*c^4*d^2*g^4*i^3 + 120*a^4*b^3*c^3*d^3
*g^4*i^3 - 90*a^5*b^2*c^2*d^4*g^4*i^3) + x^3*(6*b^7*c^6*g^4*i^3 + 18*a^6*b*
d^6*g^4*i^3 + 12*a*b^6*c^5*d*g^4*i^3 - 36*a^5*b^2*c*d^5*g^4*i^3 - 90*a^2*b^
5*c^4*d^2*g^4*i^3 + 120*a^3*b^4*c^3*d^3*g^4*i^3 - 30*a^4*b^3*c^2*d^4*g^4*i^
3) + x^4*(18*a^5*b^2*d^6*g^4*i^3 + 12*b^7*c^5*d*g^4*i^3 - 30*a*b^6*c^4*d^2*
g^4*i^3 - 60*a^4*b^3*c*d^5*g^4*i^3 + 60*a^3*b^4*c^2*d^4*g^4*i^3) + 6*a^3*b^
4*c^6*g^4*i^3 + 6*a^7*c^2*d^4*g^4*i^3 - 24*a^4*b^3*c^5*d*g^4*i^3 - 24*a^6*b
*c^3*d^3*g^4*i^3 + 36*a^5*b^2*c^4*d^2*g^4*i^3) + (b^2*d^3*atan((b^2*d^3*(3*
A + B*n)*((a^6*d^6*g^4*i^3 - b^6*c^6*g^4*i^3 + 4*a*b^5*c^5*d*g^4*i^3 - 4*a^
5*b*c*d^5*g^4*i^3 - 5*a^2*b^4*c^4*d^2*g^4*i^3 + 5*a^4*b^2*c^2*d^4*g^4*i^3)/
(a^5*d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g^4*i^3 - 5*a^4*b*c*d^4*
g^4*i^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^2*d^3*g^4*i^3) + 2*b*d*
x)*(a^5*d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g^4*i^3 - 5*a^4*b*c*d
^4*g^4*i^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^2*d^3*g^4*i^3)*10i)/
(g^4*i^3*(30*A*b^2*d^3 + 10*B*b^2*d^3*n)*(a*d - b*c)^6))*(3*A + B*n)*20i)/(
3*g^4*i^3*(a*d - b*c)^6) - (5*B*b^2*d^3*log(e*((a + b*x)/(c + d*x))^n)^2)/(
g^4*i^3*n*(a*d - b*c)^6)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))/(b*g*x+a*g)**4/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

3.159 $\int (ag+bgx)^3(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\,dx$

Optimal. Leaf size=584

$$-\frac{Bg^3in(bc-ad)^5\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(6B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+6A+11Bn\right)}{60b^2d^4}-\frac{Bg^3in(a+bx)(bc-ad)^4\left(6B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+\right.}{60b^2d^3}$$

```
[Out] 3/10*B^2*(-a*d+b*c)^4*g^3*i*n^2*x/b/d^3-3/20*B^2*(-a*d+b*c)^3*g^3*i*n^2*(d*
x+c)^2/d^4+1/30*b*B^2*(-a*d+b*c)^2*g^3*i*n^2*(d*x+c)^3/d^4-1/30*B*(-a*d+b*c
)^2*g^3*i*n*(b*x+a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/d-1/10*B*(-a*d+b*
c)*g^3*i*n*(b*x+a)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2+1/20*(-a*d+b*c)*g^
3*i*(b*x+a)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/5*g^3*i*(b*x+a)^4*(d*
x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/60*B*(-a*d+b*c)^3*g^3*i*n*(b*x+a
)^2*(3*A+B*n+3*B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/d^2-1/60*B*(-a*d+b*c)^4*g^3
*i*n*(b*x+a)*(6*A+5*B*n+6*B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/d^3-1/60*B*(-a*d
+b*c)^5*g^3*i*n*(6*A+11*B*n+6*B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/
(d*x+c))/b^2/d^4-1/10*B^2*(-a*d+b*c)^5*g^3*i*n^2*ln(d*x+c)/b^2/d^4-1/10*B^2
*(-a*d+b*c)^5*g^3*i*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^2/d^4
```

Rubi [A] time = 1.90, antiderivative size = 670, normalized size of antiderivative = 1.15, number of steps used = 52, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.302, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$-\frac{B^2g^3in^2(bc-ad)^5\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{10b^2d^4}+\frac{Bg^3in(bc-ad)^5\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{10b^2d^4}+\frac{Bg^3in(a+bx)^2(b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,
x]
```

```
[Out] -(A*B*(b*c - a*d)^4*g^3*i*n*x)/(10*b*d^3) + (B^2*(b*c - a*d)^4*g^3*i*n^2*x)
/(60*b*d^3) - (B^2*(b*c - a*d)^3*g^3*i*n^2*(a + b*x)^2)/(30*b^2*d^2) + (B^2
*(b*c - a*d)^2*g^3*i*n^2*(a + b*x)^3)/(30*b^2*d) - (B^2*(b*c - a*d)^4*g^3*i
*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(10*b^2*d^3) + (B*(b*c - a*d)^
3*g^3*i*n*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(20*b^2*d^2)
- (B*(b*c - a*d)^2*g^3*i*n*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n
]))/(30*b^2*d) - (B*(b*c - a*d)*g^3*i*n*(a + b*x)^4*(A + B*Log[e*((a + b*x)
/(c + d*x))^n]))/(10*b^2) + ((b*c - a*d)*g^3*i*(a + b*x)^4*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n])^2)/(4*b^2) + (d*g^3*i*(a + b*x)^5*(A + B*Log[e*((a +
 b*x)/(c + d*x))^n])^2)/(5*b^2) + (B^2*(b*c - a*d)^5*g^3*i*n^2*Log[c + d*x]
)/(12*b^2*d^4) - (B^2*(b*c - a*d)^5*g^3*i*n^2*Log[-((d*(a + b*x))/(b*c - a*
d))]*Log[c + d*x])/(10*b^2*d^4) + (B*(b*c - a*d)^5*g^3*i*n*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n])*Log[c + d*x])/(10*b^2*d^4) + (B^2*(b*c - a*d)^5*g^3*
i*n^2*Log[c + d*x]^2)/(20*b^2*d^4) - (B^2*(b*c - a*d)^5*g^3*i*n^2*PolyLog[2
, (b*(c + d*x))/(b*c - a*d)])/(10*b^2*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (159c+159dx)(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2dx=\int\left(\frac{159(bc-ad)(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+\cdots}{c+\cdots}\right.\right.\right.}{b}\right.$$

$$=\frac{(159(bc-ad))\int(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+\cdots}{c+\cdots}\right.\right.\right.}{b}$$

$$=\frac{159(bc-ad)g^3(a+bx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{4b^2}$$

$$=\frac{159(bc-ad)g^3(a+bx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{4b^2}$$

$$=\frac{159(bc-ad)g^3(a+bx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{4b^2}$$

$$=\frac{159(bc-ad)g^3(a+bx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{4b^2}$$

$$=-\frac{159AB(bc-ad)^4g^3nx}{10bd^3}+\frac{159B(bc-ad)^3g^3n(\cdots}{\cdots}$$

$$=-\frac{159AB(bc-ad)^4g^3nx}{10bd^3}-\frac{159B^2(bc-ad)^4g^3n\cdots}{1\cdots}$$

$$=-\frac{159AB(bc-ad)^4g^3nx}{10bd^3}-\frac{159B^2(bc-ad)^4g^3n\cdots}{1\cdots}$$

$$=-\frac{159AB(bc-ad)^4g^3nx}{10bd^3}+\frac{53B^2(bc-ad)^4g^3n^2\cdots}{20bd^3}$$

$$=-\frac{159AB(bc-ad)^4g^3nx}{10bd^3}+\frac{53B^2(bc-ad)^4g^3n^2\cdots}{20bd^3}$$

$$=-\frac{159AB(bc-ad)^4g^3nx}{10bd^3}+\frac{53B^2(bc-ad)^4g^3n^2\cdots}{20bd^3}$$

Mathematica [A] time = 0.91, size = 949, normalized size = 1.62

$$g^3i\left(4d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2(a+bx)^5+5(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2(a+bx)^4-\frac{5B(bc-ad)^2n\left(-6Bn\log\cdots\right.}{\cdots}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^
n])^2,x]
```

```
[Out] (g^3*i*(5*(b*c - a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2
+ 4*d*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - (5*B*(b*c - a*
d)^2*n*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a +
 b*x)/(c + d*x))^n] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[e*((a + b
*x)/(c + d*x))^n]) + 2*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n
]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[e*((a +
b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x - d
^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*n*(b*d*x
 + (-(b*c) + a*d)*Log[c + d*x]) + 3*B*(b*c - a*d)^3*n*((2*Log[(d*(a + b*x))
/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/
(b*c - a*d)])))/(3*d^4) + (B*(b*c - a*d)*n*(24*A*b*d*(b*c - a*d)^3*x + 24*B
*d*(b*c - a*d)^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 12*d^2*(b*c - a
*d)^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 8*d^3*(b*c - a*d
)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*d^4*(a + b*x)^4*(A
 + B*Log[e*((a + b*x)/(c + d*x))^n]) - 24*B*(b*c - a*d)^4*n*Log[c + d*x] -
24*(b*c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 4*B*
(b*c - a*d)^2*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Lo
g[c + d*x]) + B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)
*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*B*(b*
c - a*d)^3*n*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 12*B*(b*c - a*d)^4*n*(
(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyL
og[2, (b*(c + d*x))/(b*c - a*d)]))))/(3*d^4)))/(20*b^2)
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2b^3dg^3ix^4 + A^2a^3cg^3i + \left(A^2b^3c + 3\,A^2ab^2d\right)g^3ix^3 + 3\left(A^2ab^2c + A^2a^2bd\right)g^3ix^2 + \left(3\,A^2a^2bc + A^2a^3d\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="fricas")
```

```
[Out] integral(A^2*b^3*d*g^3*i*x^4 + A^2*a^3*c*g^3*i + (A^2*b^3*c + 3*A^2*a*b^2*d
)*g^3*i*x^3 + 3*(A^2*a*b^2*c + A^2*a^2*b*d)*g^3*i*x^2 + (3*A^2*a^2*b*c + A^
2*a^3*d)*g^3*i*x + (B^2*b^3*d*g^3*i*x^4 + B^2*a^3*c*g^3*i + (B^2*b^3*c + 3*
B^2*a*b^2*d)*g^3*i*x^3 + 3*(B^2*a*b^2*c + B^2*a^2*b*d)*g^3*i*x^2 + (3*B^2*a
^2*b*c + B^2*a^3*d)*g^3*i*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^3*
d*g^3*i*x^4 + A*B*a^3*c*g^3*i + (A*B*b^3*c + 3*A*B*a*b^2*d)*g^3*i*x^3 + 3*(
A*B*a*b^2*c + A*B*a^2*b*d)*g^3*i*x^2 + (3*A*B*a^2*b*c + A*B*a^3*d)*g^3*i*x)
*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \left(bgx + ag\right)^{3} (dix + ci) \left(B \ln \left(e \left(\frac{bx + a}{dx + c}\right)^{n}\right) + A\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 7.67, size = 3764, normalized size = 6.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="maxima")
```

```
[Out] 2/5*A*B*b^3*d*g^3*i*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/5*A^2*b^
3*d*g^3*i*x^5 + 1/2*A*B*b^3*c*g^3*i*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))
^n) + 3/2*A*B*a*b^2*d*g^3*i*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/
4*A^2*b^3*c*g^3*i*x^4 + 3/4*A^2*a*b^2*d*g^3*i*x^4 + 2*A*B*a*b^2*c*g^3*i*x^3
*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*A*B*a^2*b*d*g^3*i*x^3*log(e*(b*
x/(d*x + c) + a/(d*x + c))^n) + A^2*a*b^2*c*g^3*i*x^3 + A^2*a^2*b*d*g^3*i*x
^3 + 3*A*B*a^2*b*c*g^3*i*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*B*a
^3*d*g^3*i*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*A^2*a^2*b*c*g^3
*i*x^2 + 1/2*A^2*a^3*d*g^3*i*x^2 + 1/30*A*B*b^3*d*g^3*i*n*(12*a^5*log(b*x +
 a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4
*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 -
 a^4*d^4)*x)/(b^4*d^4)) - 1/12*A*B*b^3*c*g^3*i*n*(6*a^4*log(b*x + a)/b^4 -
6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^
2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/4*A*B*a*b^2*d*g^3*i*
n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*
d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^
3)) + A*B*a*b^2*c*g^3*i*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3
- ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + A*B*a^2*
b*d*g^3*i*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d -
a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 3*A*B*a^2*b*c*g^3*i*n*
(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - A*B*a
^3*d*g^3*i*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(
b*d)) + 2*A*B*a^3*c*g^3*i*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + 2*A*B*a
^3*c*g^3*i*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a^3*c*g^3*i*x - 1
/60*(6*a^4*c*d^4*g^3*i*n^2 - (5*g^3*i*n^2 + 6*g^3*i*n*log(e))*b^4*c^5 + (19
*g^3*i*n^2 + 30*g^3*i*n*log(e))*a*b^3*c^4*d - (23*g^3*i*n^2 + 60*g^3*i*n*lo
g(e))*a^2*b^2*c^3*d^2 + 3*(g^3*i*n^2 + 20*g^3*i*n*log(e))*a^3*b*c^2*d^3)*B^
2*log(d*x + c)/(b*d^4) + 1/10*(b^5*c^5*g^3*i*n^2 - 5*a*b^4*c^4*d*g^3*i*n^2
+ 10*a^2*b^3*c^3*d^2*g^3*i*n^2 - 10*a^3*b^2*c^2*d^3*g^3*i*n^2 + 5*a^4*b*c*d
^4*g^3*i*n^2 - a^5*d^5*g^3*i*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*
d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^2*d^4) + 1/60*(12*B^2*b
^5*d^5*g^3*i*x^5*log(e)^2 - 3*((2*g^3*i*n*log(e) - 5*g^3*i*log(e)^2)*b^5*c*
d^4 - (2*g^3*i*n*log(e) + 15*g^3*i*log(e)^2)*a*b^4*d^5)*B^2*x^4 + 2*((g^3*i
*n^2 - g^3*i*n*log(e))*b^5*c^2*d^3 - 2*(g^3*i*n^2 + 5*g^3*i*n*log(e) - 15*g
^3*i*log(e)^2)*a*b^4*c*d^4 + (g^3*i*n^2 + 11*g^3*i*n*log(e) + 30*g^3*i*log(
e)^2)*a^2*b^3*d^5)*B^2*x^3 - ((2*g^3*i*n^2 - 3*g^3*i*n*log(e))*b^5*c^3*d^2
- 3*(4*g^3*i*n^2 - 5*g^3*i*n*log(e))*a*b^4*c^2*d^3 + 3*(6*g^3*i*n^2 + 5*g^3
*i*n*log(e) - 30*g^3*i*log(e)^2)*a^2*b^3*c*d^4 - (8*g^3*i*n^2 + 27*g^3*i*n*
log(e) + 30*g^3*i*log(e)^2)*a^3*b^2*d^5)*B^2*x^2 - 3*(5*a^4*b*c*d^4*g^3*i*n
^2 - a^5*d^5*g^3*i*n^2)*B^2*log(b*x + a)^2 - 6*(b^5*c^5*g^3*i*n^2 - 5*a*b^4
*c^4*d*g^3*i*n^2 + 10*a^2*b^3*c^3*d^2*g^3*i*n^2 - 10*a^3*b^2*c^2*d^3*g^3*i*
n^2)*B^2*log(b*x + a)*log(d*x + c) + 3*(b^5*c^5*g^3*i*n^2 - 5*a*b^4*c^4*d*g
^3*i*n^2 + 10*a^2*b^3*c^3*d^2*g^3*i*n^2 - 10*a^3*b^2*c^2*d^3*g^3*i*n^2)*B^2
*log(d*x + c)^2 + ((g^3*i*n^2 - 6*g^3*i*n*log(e))*b^5*c^4*d - 2*(4*g^3*i*n^
2 - 15*g^3*i*n*log(e))*a*b^4*c^3*d^2 + 12*(2*g^3*i*n^2 - 5*g^3*i*n*log(e))*
a^2*b^3*c^2*d^3 - 2*(14*g^3*i*n^2 - 15*g^3*i*n*log(e) - 30*g^3*i*log(e)^2)*
a^3*b^2*c*d^4 + (11*g^3*i*n^2 + 6*g^3*i*n*log(e))*a^4*b*d^5)*B^2*x - (6*a*b
^4*c^4*d*g^3*i*n^2 - 27*a^2*b^3*c^3*d^2*g^3*i*n^2 + 47*a^3*b^2*c^2*d^3*g^3*
i*n^2 - (31*g^3*i*n^2 + 30*g^3*i*n*log(e))*a^4*b*c*d^4 + (5*g^3*i*n^2 + 6*g
^3*i*n*log(e))*a^5*d^5)*B^2*log(b*x + a) + 3*(4*B^2*b^5*d^5*g^3*i*x^5 + 20*
```

```
B^2*a^3*b^2*c*d^4*g^3*i*x + 5*(b^5*c*d^4*g^3*i + 3*a*b^4*d^5*g^3*i)*B^2*x^4
 + 20*(a*b^4*c*d^4*g^3*i + a^2*b^3*d^5*g^3*i)*B^2*x^3 + 10*(3*a^2*b^3*c*d^4
*g^3*i + a^3*b^2*d^5*g^3*i)*B^2*x^2)*log((b*x + a)^n)^2 + 3*(4*B^2*b^5*d^5*
g^3*i*x^5 + 20*B^2*a^3*b^2*c*d^4*g^3*i*x + 5*(b^5*c*d^4*g^3*i + 3*a*b^4*d^5
*g^3*i)*B^2*x^4 + 20*(a*b^4*c*d^4*g^3*i + a^2*b^3*d^5*g^3*i)*B^2*x^3 + 10*(
3*a^2*b^3*c*d^4*g^3*i + a^3*b^2*d^5*g^3*i)*B^2*x^2)*log((d*x + c)^n)^2 + (2
4*B^2*b^5*d^5*g^3*i*x^5*log(e) - 6*((g^3*i*n - 5*g^3*i*log(e))*b^5*c*d^4 -
(g^3*i*n + 15*g^3*i*log(e))*a*b^4*d^5)*B^2*x^4 - 2*(b^5*c^2*d^3*g^3*i*n + 1
0*(g^3*i*n - 6*g^3*i*log(e))*a*b^4*c*d^4 - (11*g^3*i*n + 60*g^3*i*log(e))*a
^2*b^3*d^5)*B^2*x^3 + 3*(b^5*c^3*d^2*g^3*i*n - 5*a*b^4*c^2*d^3*g^3*i*n - 5*
(g^3*i*n - 12*g^3*i*log(e))*a^2*b^3*c*d^4 + (9*g^3*i*n + 20*g^3*i*log(e))*a
^3*b^2*d^5)*B^2*x^2 - 6*(b^5*c^4*d*g^3*i*n - 5*a*b^4*c^3*d^2*g^3*i*n + 10*a
^2*b^3*c^2*d^3*g^3*i*n - a^4*b*d^5*g^3*i*n - 5*(g^3*i*n + 4*g^3*i*log(e))*a
^3*b^2*c*d^4)*B^2*x + 6*(5*a^4*b*c*d^4*g^3*i*n - a^5*d^5*g^3*i*n)*B^2*log(b
*x + a) + 6*(b^5*c^5*g^3*i*n - 5*a*b^4*c^4*d*g^3*i*n + 10*a^2*b^3*c^3*d^2*g
^3*i*n - 10*a^3*b^2*c^2*d^3*g^3*i*n)*B^2*log(d*x + c))*log((b*x + a)^n) - (
24*B^2*b^5*d^5*g^3*i*x^5*log(e) - 6*((g^3*i*n - 5*g^3*i*log(e))*b^5*c*d^4 -
 (g^3*i*n + 15*g^3*i*log(e))*a*b^4*d^5)*B^2*x^4 - 2*(b^5*c^2*d^3*g^3*i*n +
10*(g^3*i*n - 6*g^3*i*log(e))*a*b^4*c*d^4 - (11*g^3*i*n + 60*g^3*i*log(e))*
a^2*b^3*d^5)*B^2*x^3 + 3*(b^5*c^3*d^2*g^3*i*n - 5*a*b^4*c^2*d^3*g^3*i*n - 5
*(g^3*i*n - 12*g^3*i*log(e))*a^2*b^3*c*d^4 + (9*g^3*i*n + 20*g^3*i*log(e))*
a^3*b^2*d^5)*B^2*x^2 - 6*(b^5*c^4*d*g^3*i*n - 5*a*b^4*c^3*d^2*g^3*i*n + 10*
a^2*b^3*c^2*d^3*g^3*i*n - a^4*b*d^5*g^3*i*n - 5*(g^3*i*n + 4*g^3*i*log(e))*
a^3*b^2*c*d^4)*B^2*x + 6*(5*a^4*b*c*d^4*g^3*i*n - a^5*d^5*g^3*i*n)*B^2*log(
b*x + a) + 6*(b^5*c^5*g^3*i*n - 5*a*b^4*c^4*d*g^3*i*n + 10*a^2*b^3*c^3*d^2*
g^3*i*n - 10*a^3*b^2*c^2*d^3*g^3*i*n)*B^2*log(d*x + c) + 6*(4*B^2*b^5*d^5*g
^3*i*x^5 + 20*B^2*a^3*b^2*c*d^4*g^3*i*x + 5*(b^5*c*d^4*g^3*i + 3*a*b^4*d^5*
g^3*i)*B^2*x^4 + 20*(a*b^4*c*d^4*g^3*i + a^2*b^3*d^5*g^3*i)*B^2*x^3 + 10*(3
*a^2*b^3*c*d^4*g^3*i + a^3*b^2*d^5*g^3*i)*B^2*x^2)*log((b*x + a)^n))*log((d
*x + c)^n))/(b^2*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a g + b g x)^3 (c i + d i x) \left(A + B \ln\left(e \left(\frac{a + b x}{c + d x}\right)^n\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,
x)
```

```
[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)
```

```
[Out] Timed out
```

3.160 $\int (ag+bgx)^2(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\,dx$

Optimal. Leaf size=487

$$\frac{Bg^2in(bc-ad)^4\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(2B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+2A+3Bn\right)}{12b^2d^3}+\frac{Bg^2in(a+bx)(bc-ad)^3\left(2B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+\right.}{12b^2d^2}$$

```
[Out] -1/3*B^2*(-a*d+b*c)^3*g^2*i*n^2*x/b/d^2+1/12*B^2*(-a*d+b*c)^2*g^2*i*n^2*(d*
x+c)^2/d^3-1/12*B*(-a*d+b*c)^2*g^2*i*n*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c)
)^n))/b^2/d-1/6*B*(-a*d+b*c)*g^2*i*n*(b*x+a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^
n))/b^2+1/12*(-a*d+b*c)*g^2*i*(b*x+a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b
^2+1/4*g^2*i*(b*x+a)^3*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/12*B*(
-a*d+b*c)^3*g^2*i*n*(b*x+a)*(2*A+B*n+2*B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/d^2
+1/12*B*(-a*d+b*c)^4*g^2*i*n*(2*A+3*B*n+2*B*ln(e*((b*x+a)/(d*x+c))^n))*ln((
-a*d+b*c)/b/(d*x+c))/b^2/d^3+1/6*B^2*(-a*d+b*c)^4*g^2*i*n^2*ln(d*x+c)/b^2/d
^3+1/6*B^2*(-a*d+b*c)^4*g^2*i*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^2/d^3
```

Rubi [A] time = 1.59, antiderivative size = 578, normalized size of antiderivative = 1.19, number of steps used = 44, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.302, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^2in^2(bc-ad)^4\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{6b^2d^3}-\frac{Bg^2in(bc-ad)^4\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{6b^2d^3}-\frac{Bg^2in(a+bx)^2(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,
x]
```

```
[Out] (A*B*(b*c - a*d)^3*g^2*i*n*x)/(6*b*d^2) - (B^2*(b*c - a*d)^3*g^2*i*n^2*x)/(
12*b*d^2) + (B^2*(b*c - a*d)^2*g^2*i*n^2*(a + b*x)^2)/(12*b^2*d) + (B^2*(b*
c - a*d)^3*g^2*i*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(6*b^2*d^2) -
(B*(b*c - a*d)^2*g^2*i*n*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
)/(12*b^2*d) - (B*(b*c - a*d)*g^2*i*n*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(
c + d*x))^n]))/(6*b^2) + ((b*c - a*d)*g^2*i*(a + b*x)^3*(A + B*Log[e*((a +
b*x)/(c + d*x))^n])^2)/(3*b^2) + (d*g^2*i*(a + b*x)^4*(A + B*Log[e*((a + b*
x)/(c + d*x))^n])^2)/(4*b^2) - (B^2*(b*c - a*d)^4*g^2*i*n^2*Log[c + d*x])/(
12*b^2*d^3) + (B^2*(b*c - a*d)^4*g^2*i*n^2*Log[-((d*(a + b*x))/(b*c - a*d))
]*Log[c + d*x])/(6*b^2*d^3) - (B*(b*c - a*d)^4*g^2*i*n*(A + B*Log[e*((a + b
*x)/(c + d*x))^n])*Log[c + d*x])/(6*b^2*d^3) - (B^2*(b*c - a*d)^4*g^2*i*n^2
*Log[c + d*x]^2)/(12*b^2*d^3) + (B^2*(b*c - a*d)^4*g^2*i*n^2*PolyLog[2, (b*
(c + d*x))/(b*c - a*d)])/(6*b^2*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (160c+160dx)(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx = \int\left(\frac{160(bc-ad)(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{b}\right.$$

$$= \frac{(160(bc-ad))\int(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{b}$$

$$= \frac{160(bc-ad)g^2(a+bx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^2}$$

$$= \frac{160(bc-ad)g^2(a+bx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^2}$$

$$= \frac{160(bc-ad)g^2(a+bx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^2}$$

$$= \frac{160(bc-ad)g^2(a+bx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^2}$$

$$= \frac{80AB(bc-ad)^3g^2nx}{3bd^2} - \frac{40B(bc-ad)^2g^2n(a+bx)}{3b}$$

$$= \frac{80AB(bc-ad)^3g^2nx}{3bd^2} + \frac{80B^2(bc-ad)^3g^2n(a+bx}{3b^2d^2}$$

$$= \frac{80AB(bc-ad)^3g^2nx}{3bd^2} + \frac{80B^2(bc-ad)^3g^2n(a+bx}{3b^2d^2}$$

$$= \frac{80AB(bc-ad)^3g^2nx}{3bd^2} - \frac{40B^2(bc-ad)^3g^2n^2x}{3bd^2} + 4$$

$$= \frac{80AB(bc-ad)^3g^2nx}{3bd^2} - \frac{40B^2(bc-ad)^3g^2n^2x}{3bd^2} + 4$$

$$= \frac{80AB(bc-ad)^3g^2nx}{3bd^2} - \frac{40B^2(bc-ad)^3g^2n^2x}{3bd^2} + 4$$

Mathematica [A] time = 0.57, size = 716, normalized size = 1.47

$$g^2 i\left(\frac{4Bn(bc-ad)^2\left(-d^2(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-2(bc-ad)^2\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2Abdx(bc-ad)+2Bd(a+bx)(bc-ad)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+\right.}{d^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^
n])^2,x]
```

```
[Out] (g^2*i*(4*(b*c - a*d)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2
+ 3*d*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + (4*B*(b*c - a*
d)^2*n*(2*A*b*d*(b*c - a*d)*x + 2*B*d*(b*c - a*d)*(a + b*x)*Log[e*((a + b*x
)/(c + d*x))^n] - d^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) -
2*B*(b*c - a*d)^2*n*Log[c + d*x] - 2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/
(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(b*d*x + (-(b*c) + a*d)*Log[c
 + d*x]) + B*(b*c - a*d)^2*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c
+ d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^3 - (B*
(b*c - a*d)*n*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[
e*((a + b*x)/(c + d*x))^n] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[e*
((a + b*x)/(c + d*x))^n]) + 2*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c +
d*x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[e
*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(2*b*d*(b*c - a*d
)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*n
*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 3*B*(b*c - a*d)^3*n*((2*Log[(d*(a
+ b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c +
 d*x))/(b*c - a*d)])))/d^3))/(12*b^2)
```

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(A^2b^2dg^2ix^3 + A^2a^2cg^2i + \left(A^2b^2c + 2\,A^2abd\right)g^2ix^2 + \left(2\,A^2abc + A^2a^2d\right)g^2ix + \left(B^2b^2dg^2ix^3 + B^2a^2c\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="fricas")
```

```
[Out] integral(A^2*b^2*d*g^2*i*x^3 + A^2*a^2*c*g^2*i + (A^2*b^2*c + 2*A^2*a*b*d)*
g^2*i*x^2 + (2*A^2*a*b*c + A^2*a^2*d)*g^2*i*x + (B^2*b^2*d*g^2*i*x^3 + B^2*
a^2*c*g^2*i + (B^2*b^2*c + 2*B^2*a*b*d)*g^2*i*x^2 + (2*B^2*a*b*c + B^2*a^2*
d)*g^2*i*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^2*d*g^2*i*x^3 + A*B
*a^2*c*g^2*i + (A*B*b^2*c + 2*A*B*a*b*d)*g^2*i*x^2 + (2*A*B*a*b*c + A*B*a^2
*d)*g^2*i*x)*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \left(bgx + ag\right)^2 (dix + ci) \left(B\ln\left(e\left(\frac{bx + a}{dx + c}\right)^n\right) + A\right)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 6.92, size = 2691, normalized size = 5.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="maxima")
```

```
[Out] 1/2*A*B*b^2*d*g^2*i*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A^2*b^
2*d*g^2*i*x^4 + 2/3*A*B*b^2*c*g^2*i*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))
^n) + 4/3*A*B*a*b*d*g^2*i*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*
A^2*b^2*c*g^2*i*x^3 + 2/3*A^2*a*b*d*g^2*i*x^3 + 2*A*B*a*b*c*g^2*i*x^2*log(e
*(b*x/(d*x + c) + a/(d*x + c))^n) + A*B*a^2*d*g^2*i*x^2*log(e*(b*x/(d*x + c
) + a/(d*x + c))^n) + A^2*a*b*c*g^2*i*x^2 + 1/2*A^2*a^2*d*g^2*i*x^2 - 1/12*
A*B*b^2*d*g^2*i*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^
3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3
*d^3)*x)/(b^3*d^3)) + 1/3*A*B*b^2*c*g^2*i*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3
*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^
2*d^2)) + 2/3*A*B*a*b*d*g^2*i*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c
)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 2*
A*B*a*b*c*g^2*i*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d
)*x/(b*d)) - A*B*a^2*d*g^2*i*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2
 + (b*c - a*d)*x/(b*d)) + 2*A*B*a^2*c*g^2*i*n*(a*log(b*x + a)/b - c*log(d*x
 + c)/d) + 2*A*B*a^2*c*g^2*i*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2
*a^2*c*g^2*i*x - 1/12*(2*a^3*c*d^3*g^2*i*n^2 + (g^2*i*n^2 + 2*g^2*i*n*log(e
))*b^3*c^4 - 2*(g^2*i*n^2 + 4*g^2*i*n*log(e))*a*b^2*c^3*d - (g^2*i*n^2 - 12
*g^2*i*n*log(e))*a^2*b*c^2*d^2)*B^2*log(d*x + c)/(b*d^3) - 1/6*(b^4*c^4*g^2
*i*n^2 - 4*a*b^3*c^3*d*g^2*i*n^2 + 6*a^2*b^2*c^2*d^2*g^2*i*n^2 - 4*a^3*b*c*
d^3*g^2*i*n^2 + a^4*d^4*g^2*i*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a
*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^2*d^3) + 1/12*(3*B^2*b
^4*d^4*g^2*i*x^4*log(e)^2 - 2*((g^2*i*n*log(e) - 2*g^2*i*log(e)^2)*b^4*c*d^
3 - (g^2*i*n*log(e) + 4*g^2*i*log(e)^2)*a*b^3*d^4)*B^2*x^3 + ((g^2*i*n^2 -
g^2*i*n*log(e))*b^4*c^2*d^2 - 2*(g^2*i*n^2 + 2*g^2*i*n*log(e) - 6*g^2*i*log
(e)^2)*a*b^3*c*d^3 + (g^2*i*n^2 + 5*g^2*i*n*log(e) + 6*g^2*i*log(e)^2)*a^2*
b^2*d^4)*B^2*x^2 - (4*a^3*b*c*d^3*g^2*i*n^2 - a^4*d^4*g^2*i*n^2)*B^2*log(b*
x + a)^2 + 2*(b^4*c^4*g^2*i*n^2 - 4*a*b^3*c^3*d*g^2*i*n^2 + 6*a^2*b^2*c^2*d
^2*g^2*i*n^2)*B^2*log(b*x + a)*log(d*x + c) - (b^4*c^4*g^2*i*n^2 - 4*a*b^3*
c^3*d*g^2*i*n^2 + 6*a^2*b^2*c^2*d^2*g^2*i*n^2)*B^2*log(d*x + c)^2 - ((g^2*i
*n^2 - 2*g^2*i*n*log(e))*b^4*c^3*d - (5*g^2*i*n^2 - 8*g^2*i*n*log(e))*a*b^3
*c^2*d^2 + (7*g^2*i*n^2 - 4*g^2*i*n*log(e) - 12*g^2*i*log(e)^2)*a^2*b^2*c*d
^3 - (3*g^2*i*n^2 + 2*g^2*i*n*log(e))*a^3*b*d^4)*B^2*x + (2*a*b^3*c^3*d*g^2
*i*n^2 - 7*a^2*b^2*c^2*d^2*g^2*i*n^2 + 2*(3*g^2*i*n^2 + 4*g^2*i*n*log(e))*a
^3*b*c*d^3 - (g^2*i*n^2 + 2*g^2*i*n*log(e))*a^4*d^4)*B^2*log(b*x + a) + (3*
B^2*b^4*d^4*g^2*i*x^4 + 12*B^2*a^2*b^2*c*d^3*g^2*i*x + 4*(b^4*c*d^3*g^2*i +
 2*a*b^3*d^4*g^2*i)*B^2*x^3 + 6*(2*a*b^3*c*d^3*g^2*i + a^2*b^2*d^4*g^2*i)*B
^2*x^2)*log((b*x + a)^n)^2 + (3*B^2*b^4*d^4*g^2*i*x^4 + 12*B^2*a^2*b^2*c*d^
3*g^2*i*x + 4*(b^4*c*d^3*g^2*i + 2*a*b^3*d^4*g^2*i)*B^2*x^3 + 6*(2*a*b^3*c*
d^3*g^2*i + a^2*b^2*d^4*g^2*i)*B^2*x^2)*log((d*x + c)^n)^2 + (6*B^2*b^4*d^4
*g^2*i*x^4*log(e) - 2*((g^2*i*n - 4*g^2*i*log(e))*b^4*c*d^3 - (g^2*i*n + 8*
g^2*i*log(e))*a*b^3*d^4)*B^2*x^3 - (b^4*c^2*d^2*g^2*i*n + 4*(g^2*i*n - 6*g^
2*i*log(e))*a*b^3*c*d^3 - (5*g^2*i*n + 12*g^2*i*log(e))*a^2*b^2*d^4)*B^2*x^
2 + 2*(b^4*c^3*d*g^2*i*n - 4*a*b^3*c^2*d^2*g^2*i*n + a^3*b*d^4*g^2*i*n + 2*
(g^2*i*n + 6*g^2*i*log(e))*a^2*b^2*c*d^3)*B^2*x + 2*(4*a^3*b*c*d^3*g^2*i*n
- a^4*d^4*g^2*i*n)*B^2*log(b*x + a) - 2*(b^4*c^4*g^2*i*n - 4*a*b^3*c^3*d*g^
2*i*n + 6*a^2*b^2*c^2*d^2*g^2*i*n)*B^2*log(d*x + c))*log((b*x + a)^n) - (6*
B^2*b^4*d^4*g^2*i*x^4*log(e) - 2*((g^2*i*n - 4*g^2*i*log(e))*b^4*c*d^3 - (g
^2*i*n + 8*g^2*i*log(e))*a*b^3*d^4)*B^2*x^3 - (b^4*c^2*d^2*g^2*i*n + 4*(g^2
*i*n - 6*g^2*i*log(e))*a*b^3*c*d^3 - (5*g^2*i*n + 12*g^2*i*log(e))*a^2*b^2*
d^4)*B^2*x^2 + 2*(b^4*c^3*d*g^2*i*n - 4*a*b^3*c^2*d^2*g^2*i*n + a^3*b*d^4*g
^2*i*n + 2*(g^2*i*n + 6*g^2*i*log(e))*a^2*b^2*c*d^3)*B^2*x + 2*(4*a^3*b*c*d
^3*g^2*i*n - a^4*d^4*g^2*i*n)*B^2*log(b*x + a) - 2*(b^4*c^4*g^2*i*n - 4*a*b
^3*c^3*d*g^2*i*n + 6*a^2*b^2*c^2*d^2*g^2*i*n)*B^2*log(d*x + c) + 2*(3*B^2*b
^4*d^4*g^2*i*x^4 + 12*B^2*a^2*b^2*c*d^3*g^2*i*x + 4*(b^4*c*d^3*g^2*i + 2*a*
b^3*d^4*g^2*i)*B^2*x^3 + 6*(2*a*b^3*c*d^3*g^2*i + a^2*b^2*d^4*g^2*i)*B^2*x^
2)*log((b*x + a)^n))*log((d*x + c)^n))/(b^2*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a\,g+b\,g\,x\right)^2\,\left(c\,i+d\,i\,x\right)\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,
x)
```

```
[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)
```

```
[Out] Timed out
```

3.161 $\int (ag+bgx)(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=372

$$-\frac{Bgin(bc-ad)^3\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A+Bn\right)}{3b^2d^2}-\frac{Bgin(a+bx)(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^2d}+$$

```
[Out] 1/3*B^2*(-a*d+b*c)^2*g*i*n^2*x/b/d-1/3*B*(-a*d+b*c)^2*g*i*n*(b*x+a)*(A+B*ln
(e*((b*x+a)/(d*x+c))^n))/b^2/d-1/3*B*(-a*d+b*c)*g*i*n*(b*x+a)^2*(A+B*ln(e*(
(b*x+a)/(d*x+c))^n))/b^2+1/6*(-a*d+b*c)*g*i*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d
*x+c))^n))^2/b^2+1/3*g*i*(b*x+a)^2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^
2/b-1/3*B*(-a*d+b*c)^3*g*i*n*(A+B*n+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b
*c)/b/(d*x+c))/b^2/d^2-1/3*B^2*(-a*d+b*c)^3*g*i*n^2*ln(d*x+c)/b^2/d^2-1/3*B
^2*(-a*d+b*c)^3*g*i*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^2/d^2
```

Rubi [B] time = 2.88, antiderivative size = 1323, normalized size of antiderivative = 3.56, number of steps used = 72, number of rules used = 14, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.342, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 72}

$$-\frac{B^2dgin^2\log^2(a+bx)a^3}{3b^2}+\frac{2Bdgin\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)a^3}{3b^2}+\frac{2B^2dgin^2\log(a+bx)\log\left(\frac{b(c+dx)}{bc-ad}\right)a^3}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]
```

```
[Out] (-2*A*b*B*(a^2/b^2 - c^2/d^2)*d*g*i*n*x)/3 - (A*B*(b*c - a*d)*(b*c + a*d)*g
*i*n*x)/(b*d) + (B^2*(b*c - a*d)^2*g*i*n^2*x)/(3*b*d) + (a^2*B^2*(b*c - a*d
)*g*i*n^2*Log[a + b*x])/(3*b^2) - (a^2*B^2*c*g*i*n^2*Log[a + b*x]^2)/b - (a
^3*B^2*d*g*i*n^2*Log[a + b*x]^2)/(3*b^2) + (a^2*B^2*(b*c + a*d)*g*i*n^2*Log
[a + b*x]^2)/(2*b^2) - (B^2*(b*c - a*d)*(b*c + a*d)*g*i*n*(a + b*x)*Log[e*(
(a + b*x)/(c + d*x))^n])/(3*b^2*d) - (B*(b*c - a*d)*g*i*n*x^2*(A + B*Log[e*
((a + b*x)/(c + d*x))^n]))/3 + (2*a^2*B*c*g*i*n*Log[a + b*x]*(A + B*Log[e*(
(a + b*x)/(c + d*x))^n]))/b + (2*a^3*B*d*g*i*n*Log[a + b*x]*(A + B*Log[e*((
a + b*x)/(c + d*x))^n]))/(3*b^2) - (a^2*B*(b*c + a*d)*g*i*n*Log[a + b*x]*(A
 + B*Log[e*((a + b*x)/(c + d*x))^n]))/b^2 + a*c*g*i*x*(A + B*Log[e*((a + b*
x)/(c + d*x))^n])^2 + ((b*c + a*d)*g*i*x^2*(A + B*Log[e*((a + b*x)/(c + d*x
))^n])^2)/2 + (b*d*g*i*x^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/3 - (B
^2*c^2*(b*c - a*d)*g*i*n^2*Log[c + d*x])/(3*d^2) + (B^2*(b*c - a*d)^2*(b*c
+ a*d)*g*i*n^2*Log[c + d*x])/(3*b^2*d^2) + (2*b*B^2*c^3*g*i*n^2*Log[-((d*(a
 + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*d^2) + (2*a*B^2*c^2*g*i*n^2*Log[-((
d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/d - (B^2*c^2*(b*c + a*d)*g*i*n^2*L
og[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/d^2 - (2*b*B*c^3*g*i*n*(A +
B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(3*d^2) - (2*a*B*c^2*g*i*n*
(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/d + (B*c^2*(b*c + a*d)
*g*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/d^2 - (b*B^2*c^
3*g*i*n^2*Log[c + d*x]^2)/(3*d^2) - (a*B^2*c^2*g*i*n^2*Log[c + d*x]^2)/d +
(B^2*c^2*(b*c + a*d)*g*i*n^2*Log[c + d*x]^2)/(2*d^2) + (2*a^2*B^2*c*g*i*n^2
*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/b + (2*a^3*B^2*d*g*i*n^2*Log[
a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(3*b^2) - (a^2*B^2*(b*c + a*d)*g*i
*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/b^2 + (2*a^2*B^2*c*g*i*n^
2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/b + (2*a^3*B^2*d*g*i*n^2*PolyLo
g[2, -((d*(a + b*x))/(b*c - a*d))])/(3*b^2) - (a^2*B^2*(b*c + a*d)*g*i*n^2*
PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/b^2 + (2*b*B^2*c^3*g*i*n^2*PolyLo
g[2, (b*(c + d*x))/(b*c - a*d)])/(3*d^2) + (2*a*B^2*c^2*g*i*n^2*PolyLog[2,
```

```
(b*(c + d*x))/(b*c - a*d)])/d - (B^2*c^2*(b*c + a*d)*g*i*n^2*PolyLog[2, (b*
(c + d*x))/(b*c - a*d)])/d^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (161c + 161dx)(ag + bgx)\left(A + B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx = \int \left(161acg\left(A + B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 + 161(bc$$

$$= (161acg)\int \left(A + B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx + (1$$

$$= 161acgx\left(A + B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 + \frac{161}{2}(bc +$$

$$= 161acgx\left(A + B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 + \frac{161}{2}(bc +$$

$$= 161acgx\left(A + B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 + \frac{161}{2}(bc +$$

$$= 161acgx\left(A + B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 + \frac{161}{2}(bc +$$

$$= -\frac{161AB(bc-ad)(bc+ad)gnx}{3bd} - \frac{161}{3}B(bc-ad)$$

$$= -\frac{161AB(bc-ad)(bc+ad)gnx}{3bd} - \frac{161B^2(bc-ad}{}$$

$$= -\frac{161AB(bc-ad)(bc+ad)gnx}{3bd} - \frac{161B^2(bc-ad}{}$$

$$= -\frac{161AB(bc-ad)(bc+ad)gnx}{3bd} + \frac{161B^2(bc-ad}{3bd}$$

$$= -\frac{161AB(bc-ad)(bc+ad)gnx}{3bd} + \frac{161B^2(bc-ad}{3bd}$$

$$= -\frac{161AB(bc-ad)(bc+ad)gnx}{3bd} + \frac{161B^2(bc-ad}{3bd}$$

Mathematica [B] time = 0.74, size = 937, normalized size = 2.52

$$\frac{gi\left(2b^3Bn\left(A + B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log(c+dx)c^3 - b^3B^2n^2\left(\left(2\log\left(\frac{d(a+bx)}{ad-bc}\right) - \log(c+dx)\right)\log(c+dx) + 2\text{Li}_2\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
)^2,x]
```

```
[Out] (g*i*(-6*A*b^2*B*c*d*(b*c - a*d)*n*x + 6*a*A*b*B*d^2*(-(b*c) + a*d)*n*x + 4
*A*b*B*d*(b*c - a*d)*(b*c + a*d)*n*x - 6*b*B^2*c*d*(b*c - a*d)*n*(a + b*x)*
```

```
Log[e*((a + b*x)/(c + d*x))^n] + 6*a*B^2*d^2*(-(b*c) + a*d)*n*(a + b*x)*Log
[e*((a + b*x)/(c + d*x))^n] + 4*B^2*d*(b*c - a*d)*(b*c + a*d)*n*(a + b*x)*L
og[e*((a + b*x)/(c + d*x))^n] - 2*b^2*B*d^2*(b*c - a*d)*n*x^2*(A + B*Log[e*
((a + b*x)/(c + d*x))^n]) + 6*a^2*b*B*c*d^2*n*Log[a + b*x]*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n]) - 2*a^3*B*d^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)
/(c + d*x))^n]) + 6*a*b^2*c*d^2*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2
+ 3*b^2*d^2*(b*c + a*d)*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 2*b^
3*d^3*x^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 6*b*B^2*c*(b*c - a*d)^
2*n^2*Log[c + d*x] + 6*a*B^2*d*(b*c - a*d)^2*n^2*Log[c + d*x] - 4*B^2*(b*c
- a*d)^2*(b*c + a*d)*n^2*Log[c + d*x] + 2*b^3*B*c^3*n*(A + B*Log[e*((a + b*
x)/(c + d*x))^n])*Log[c + d*x] - 6*a*b^2*B*c^2*d*n*(A + B*Log[e*((a + b*x)/
(c + d*x))^n])*Log[c + d*x] + 2*B^2*(b*c - a*d)*n^2*(a^2*d^2*Log[a + b*x] -
 b*(d*(-(b*c) + a*d)*x + b*c^2*Log[c + d*x])) - 3*a^2*b*B^2*c*d^2*n^2*(Log[
a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (
d*(a + b*x))/(-(b*c) + a*d)]) + a^3*B^2*d^3*n^2*(Log[a + b*x]*(Log[a + b*x]
 - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) +
 a*d)]) - b^3*B^2*c^3*n^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d
*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 3*a*b^2*B^2*
c^2*d*n^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x
] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(6*b^2*d^2)
```

fricas [F] time = 0.90, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2bdgix^2 + A^2acgi + \left(A^2bc + A^2ad\right)gix + \left(B^2bdgix^2 + B^2acgi + \left(B^2bc + B^2ad\right)gix\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, alg
orithm="fricas")
```

```
[Out] integral(A^2*b*d*g*i*x^2 + A^2*a*c*g*i + (A^2*b*c + A^2*a*d)*g*i*x + (B^2*b
*d*g*i*x^2 + B^2*a*c*g*i + (B^2*b*c + B^2*a*d)*g*i*x)*log(e*((b*x + a)/(d*x
 + c))^n)^2 + 2*(A*B*b*d*g*i*x^2 + A*B*a*c*g*i + (A*B*b*c + A*B*a*d)*g*i*x)
*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)\left(dix+ci\right)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)*(d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 6.92, size = 1542, normalized size = 4.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, alg
orithm="maxima")
```

```
[Out] 2/3*A*B*b*d*g*i*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*A^2*b*d*g*
i*x^3 + A*B*b*c*g*i*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A*B*a*d*g*
i*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*A^2*b*c*g*i*x^2 + 1/2*A^
2*a*d*g*i*x^2 + 1/3*A*B*b*d*g*i*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x +
 c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) -
A*B*b*c*g*i*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/
(b*d)) - A*B*a*d*g*i*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c
- a*d)*x/(b*d)) + 2*A*B*a*c*g*i*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + 2
*A*B*a*c*g*i*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a*c*g*i*x - 1/3
*(a^2*c*d^2*g*i*n^2 - b^2*c^3*g*i*n*log(e) - (g*i*n^2 - 3*g*i*n*log(e))*a*b
*c^2*d)*B^2*log(d*x + c)/(b*d^2) + 1/3*(b^3*c^3*g*i*n^2 - 3*a*b^2*c^2*d*g*i
*n^2 + 3*a^2*b*c*d^2*g*i*n^2 - a^3*d^3*g*i*n^2)*(log(b*x + a)*log((b*d*x +
a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^2*d^2) +
1/6*(2*B^2*b^3*d^3*g*i*x^3*log(e)^2 - ((2*g*i*n*log(e) - 3*g*i*log(e)^2)*b^
3*c*d^2 - (2*g*i*n*log(e) + 3*g*i*log(e)^2)*a*b^2*d^3)*B^2*x^2 - (3*a^2*b*c
*d^2*g*i*n^2 - a^3*d^3*g*i*n^2)*B^2*log(b*x + a)^2 - 2*(b^3*c^3*g*i*n^2 - 3
*a*b^2*c^2*d*g*i*n^2)*B^2*log(b*x + a)*log(d*x + c) + (b^3*c^3*g*i*n^2 - 3*
a*b^2*c^2*d*g*i*n^2)*B^2*log(d*x + c)^2 + 2*((g*i*n^2 - g*i*n*log(e))*b^3*c
^2*d - (2*g*i*n^2 - 3*g*i*log(e)^2)*a*b^2*c*d^2 + (g*i*n^2 + g*i*n*log(e))*
a^2*b*d^3)*B^2*x - 2*(a*b^2*c^2*d*g*i*n^2 + a^3*d^3*g*i*n*log(e) - (g*i*n^2
 + 3*g*i*n*log(e))*a^2*b*c*d^2)*B^2*log(b*x + a) + (2*B^2*b^3*d^3*g*i*x^3 +
 6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c*d^2*g*i + a*b^2*d^3*g*i)*B^2*x^2)*log((
b*x + a)^n)^2 + (2*B^2*b^3*d^3*g*i*x^3 + 6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c
*d^2*g*i + a*b^2*d^3*g*i)*B^2*x^2)*log((d*x + c)^n)^2 + 2*(2*B^2*b^3*d^3*g*
i*x^3*log(e) - ((g*i*n - 3*g*i*log(e))*b^3*c*d^2 - (g*i*n + 3*g*i*log(e))*a
*b^2*d^3)*B^2*x^2 - (b^3*c^2*d*g*i*n - a^2*b*d^3*g*i*n - 6*a*b^2*c*d^2*g*i*
log(e))*B^2*x + (3*a^2*b*c*d^2*g*i*n - a^3*d^3*g*i*n)*B^2*log(b*x + a) + (b
^3*c^3*g*i*n - 3*a*b^2*c^2*d*g*i*n)*B^2*log(d*x + c))*log((b*x + a)^n) - 2*
(2*B^2*b^3*d^3*g*i*x^3*log(e) - ((g*i*n - 3*g*i*log(e))*b^3*c*d^2 - (g*i*n
+ 3*g*i*log(e))*a*b^2*d^3)*B^2*x^2 - (b^3*c^2*d*g*i*n - a^2*b*d^3*g*i*n - 6
*a*b^2*c*d^2*g*i*log(e))*B^2*x + (3*a^2*b*c*d^2*g*i*n - a^3*d^3*g*i*n)*B^2*
log(b*x + a) + (b^3*c^3*g*i*n - 3*a*b^2*c^2*d*g*i*n)*B^2*log(d*x + c) + (2*
B^2*b^3*d^3*g*i*x^3 + 6*B^2*a*b^2*c*d^2*g*i*x + 3*(b^3*c*d^2*g*i + a*b^2*d^
3*g*i)*B^2*x^2)*log((b*x + a)^n))*log((d*x + c)^n))/(b^2*d^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a\,g+b\,g\,x\right)\,\left(c\,i+d\,i\,x\right)\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,x)
```

```
[Out] int((a*g + b*g*x)*(c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)
```

```
[Out] Timed out
```

3.162 $\int (ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=220

$$\frac{Bin(bc-ad)^2\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2d}-\frac{Bin(a+bx)(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2}+\frac{i(c+dx)^2}{}$$

```
[Out] -B*(-a*d+b*c)*i*n*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2+1/2*i*(d*x+c)
^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d+B^2*(-a*d+b*c)^2*i*n^2*ln(d*x+c)/b^2
/d+B*(-a*d+b*c)^2*i*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(b*x
+a))/b^2/d-B^2*(-a*d+b*c)^2*i*n^2*polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/d
```

Rubi [A] time = 0.48, antiderivative size = 307, normalized size of antiderivative = 1.40, number of steps used = 15, number of rules used = 12, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{B^2in^2(bc-ad)^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2d}-\frac{Bin(bc-ad)^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2d}+\frac{i(c+dx)^2\left(B\log\left(e\right.\right.}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]
```

```
[Out] -((A*B*(b*c - a*d)*i*n*x)/b) + (B^2*(b*c - a*d)^2*i*n^2*Log[a + b*x]^2)/(2*
b^2*d) - (B^2*(b*c - a*d)*i*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/b^2
 - (B*(b*c - a*d)^2*i*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
)/(b^2*d) + (i*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*d)
+ (B^2*(b*c - a*d)^2*i*n^2*Log[c + d*x])/(b^2*d) - (B^2*(b*c - a*d)^2*i*n^2
*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*d) - (B^2*(b*c - a*d)^2*
i*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (162c+162dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx = \frac{81(c+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{d} - \frac{(Bn)\int \frac{26244(bc-ad)(c+d}{}}{16}$$

$$= \frac{81(c+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{d} - \frac{(162B(bc-ad)n)\int}{}$$

$$= \frac{81(c+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{d} - \frac{(162B(bc-ad)n)\int\Big(}{}$$

$$= \frac{81(c+dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{d} - \frac{(162B(bc-ad)n)\int\Big(}{}$$

$$= -\frac{162AB(bc-ad)nx}{b} - \frac{162B(bc-ad)^2n\log(a+bx)\Big(A+B\,\mathrm{l}}{b^2d}$$

$$= -\frac{162AB(bc-ad)nx}{b} - \frac{162B^2(bc-ad)n(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.}{b^2}$$

$$= -\frac{162AB(bc-ad)nx}{b} - \frac{162B^2(bc-ad)n(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.}{b^2}$$

$$= -\frac{162AB(bc-ad)nx}{b} - \frac{162B^2(bc-ad)n(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.}{b^2}$$

$$= -\frac{162AB(bc-ad)nx}{b} + \frac{81B^2(bc-ad)^2n^2\log^2(a+bx)}{b^2d} - \frac{162}{}$$

$$= -\frac{162AB(bc-ad)nx}{b} + \frac{81B^2(bc-ad)^2n^2\log^2(a+bx)}{b^2d} - \frac{162}{}$$

Mathematica [A] time = 0.19, size = 216, normalized size = 0.98

$$\frac{i\left(\frac{Bn(bc-ad)\left(-2(bc-ad)\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+Bn\log\left(\frac{b(c+dx)}{bc-ad}\right)+A\right)-2\left(Bd(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+Bn(ad-bc)\log(c+dx)+Abdx\right)+2Bn(ad-bc)\mathrm{Li}_2\right.}{b^2}\right.}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]
```

```
[Out] (i*((c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + (B*(b*c - a*d)*n
*(B*(b*c - a*d)*n*Log[a + b*x]^2 - 2*(A*b*d*x + B*d*(a + b*x)*Log[e*((a + b
*x)/(c + d*x))^n] + B*(-(b*c) + a*d)*n*Log[c + d*x]) - 2*(b*c - a*d)*Log[a
+ b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(b*(c + d*x))/(b*c -
 a*d)]) + 2*B*(-(b*c) + a*d)*n*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))/b
^2))/(2*d)
```

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2dix + A^2ci + \left(B^2dix + B^2ci\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2 + 2\left(ABdix + ABci\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fric
as")
```

```
[Out] integral(A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log(e*((b*x + a)/(d*x
+ c))^n)^2 + 2*(A*B*d*i*x + A*B*c*i)*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="giac
")
```

```
[Out] Timed out
```

maple [F] time = 0.11, size = 0, normalized size = 0.00

$$\int (dix + ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 6.65, size = 825, normalized size = 3.75

$$ABdix^2\log\left(e\left(\frac{bx}{dx+c} + \frac{a}{dx+c}\right)^n\right) + \frac{1}{2}A^2dix^2 - ABdin\left(\frac{a^2\log(bx+a)}{b^2} - \frac{c^2\log(dx+c)}{d^2} + \frac{(bc-ad)x}{bd}\right) + 2\,ABc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="maxi
ma")
```

```
[Out] A*B*d*i*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*A^2*d*i*x^2 - A*B*
d*i*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) +
 2*A*B*c*i*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + 2*A*B*c*i*x*log(e*(b*x
/(d*x + c) + a/(d*x + c))^n) + A^2*c*i*x - (a*c*d*i*n^2 - (i*n^2 - i*n*log(
e))*b*c^2)*B^2*log(d*x + c)/(b*d) - (b^2*c^2*i*n^2 - 2*a*b*c*d*i*n^2 + a^2*
d^2*i*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x
 + a*d)/(b*c - a*d)))*B^2/(b^2*d) + 1/2*(2*B^2*b^2*c^2*i*n^2*log(b*x + a)*l
og(d*x + c) - B^2*b^2*c^2*i*n^2*log(d*x + c)^2 + B^2*b^2*d^2*i*x^2*log(e)^2
 - (2*a*b*c*d*i*n^2 - a^2*d^2*i*n^2)*B^2*log(b*x + a)^2 + 2*(a*b*d^2*i*n*lo
g(e) - (i*n*log(e) - i*log(e)^2)*b^2*c*d)*B^2*x - 2*((i*n^2 - 2*i*n*log(e))
*a*b*c*d - (i*n^2 - i*n*log(e))*a^2*d^2)*B^2*log(b*x + a) + (B^2*b^2*d^2*i*
x^2 + 2*B^2*b^2*c*d*i*x)*log((b*x + a)^n)^2 + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^
2*c*d*i*x)*log((d*x + c)^n)^2 + 2*(B^2*b^2*d^2*i*x^2*log(e) - B^2*b^2*c^2*i
*n*log(d*x + c) + (a*b*d^2*i*n - (i*n - 2*i*log(e))*b^2*c*d)*B^2*x + (2*a*b
*c*d*i*n - a^2*d^2*i*n)*B^2*log(b*x + a))*log((b*x + a)^n) - 2*(B^2*b^2*d^2
*i*x^2*log(e) - B^2*b^2*c^2*i*n*log(d*x + c) + (a*b*d^2*i*n - (i*n - 2*i*lo
```

```
g(e))*b^2*c*d)*B^2*x + (2*a*b*c*d*i*n - a^2*d^2*i*n)*B^2*log(b*x + a) + (B^
2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x)*log((b*x + a)^n))*log((d*x + c)^n))/(b
^2*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,i+d\,i\,x)\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,x)
```

```
[Out] int((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$i\left(\int A^2c\,dx+\int A^2dx\,dx+\int B^2c\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)^2dx+\int 2ABc\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)dx+\int\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)
```

```
[Out] i*(Integral(A**2*c, x) + Integral(A**2*d*x, x) + Integral(B**2*c*log(e*(a/(
c + d*x) + b*x/(c + d*x))**n)**2, x) + Integral(2*A*B*c*log(e*(a/(c + d*x)
+ b*x/(c + d*x))**n), x) + Integral(B**2*d*x*log(e*(a/(c + d*x) + b*x/(c +
d*x))**n)**2, x) + Integral(2*A*B*d*x*log(e*(a/(c + d*x) + b*x/(c + d*x))**
n), x))
```

3.163 $\int \frac{(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ag+bgx}\,dx$

Optimal. Leaf size=306

$$\frac{2Bin(bc-ad)\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g}+\frac{2Bin(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g}+\frac{di(a$$

```
[Out] d*i*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^2/g+2*B*(-a*d+b*c)*i*n*(A+B
*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/b^2/g-(-a*d+b*c)*i*(A+
B*ln(e*((b*x+a)/(d*x+c))^n))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^2/g+2*B^2*(-a*d+
b*c)*i*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^2/g+2*B*(-a*d+b*c)*i*n*(A+B*ln(
e*((b*x+a)/(d*x+c))^n))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^2/g+2*B^2*(-a*d+b*
c)*i*n^2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^2/g
```

Rubi [B] time = 2.87, antiderivative size = 692, normalized size of antiderivative = 2.26, number of steps used = 36, number of rules used = 19, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.442, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{2ABin(bc-ad)\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2g}+\frac{2B^2in(bc-ad)\text{PolyLog}\left(2,\frac{bc-ad}{d(a+bx)}+1\right)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^2g}+\frac{2aB^2din^2\text{Poly}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x),
x]
```

```
[Out] -((A*B*(b*c - a*d)*i*n*Log[a + b*x]^2)/(b^2*g)) - (a*B^2*d*i*n^2*Log[a + b*
x]^2)/(b^2*g) - (B^2*(b*c - a*d)*i*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*
((a + b*x)/(c + d*x))^n]^2)/(b^2*g) - (B^2*(b*c - a*d)*i*Log[a + b*x]*Log[e
*((a + b*x)/(c + d*x))^n]^2)/(b^2*g) + (2*a*B*d*i*n*Log[a + b*x]*(A + B*Log
[e*((a + b*x)/(c + d*x))^n]))/(b^2*g) + (d*i*x*(A + B*Log[e*((a + b*x)/(c +
 d*x))^n])^2)/(b*g) + ((b*c - a*d)*i*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(
c + d*x))^n])^2)/(b^2*g) + (2*B^2*c*i*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]
*Log[c + d*x])/(b*g) - (2*B*c*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Lo
g[c + d*x])/(b*g) - (B^2*c*i*n^2*Log[c + d*x]^2)/(b*g) + (2*A*B*(b*c - a*d)
*i*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*g) + (2*a*B^2*d*i*n^
2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*g) + (2*A*B*(b*c - a*d)
*i*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*g) + (2*a*B^2*d*i*n^2*P
olyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*g) + (2*B^2*c*i*n^2*PolyLog[2
, (b*(c + d*x))/(b*c - a*d)])/(b*g) + (2*B^2*(b*c - a*d)*i*n*Log[e*((a + b*
x)/(c + d*x))^n]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^2*g) + (2*B^
2*(b*c - a*d)*i*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^2*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
```

```
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
```

]

Rubi steps

$$\int \frac{(163c+163dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ag+bgx}\,dx=\int\left(\frac{163d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{bg}+\frac{163(bc-ad)\left(A+B\log\left(\right.\right.}{bg(a+bx)}\right.$$

$$=\frac{(163d)\int\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx}{bg}+\frac{(163(bc-ad))\int\frac{\left(A+B\,l\right.}{}}{bg}$$

$$=\frac{163dx\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{bg}+\frac{163(bc-ad)\log(a+bx)\left(A\right.}{b^2g}$$

$$=\frac{163dx\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{bg}+\frac{163(bc-ad)\log(a+bx)\left(A\right.}{b^2g}$$

$$=\frac{163dx\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{bg}+\frac{163(bc-ad)\log(a+bx)\left(A\right.}{b^2g}$$

$$=\frac{163dx\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{bg}+\frac{163(bc-ad)\log(a+bx)\left(A\right.}{b^2g}$$

$$=\frac{326aBdn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g}+\frac{163dx\left(A+B\right.}{}$$

$$=-\frac{163B^2(bc-ad)\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^2g}+\frac{326aBdn\log(a}{}$$

$$=-\frac{163B^2(bc-ad)\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^2g}-\frac{163B^2(bc-a}{}$$

$$=-\frac{163AB(bc-ad)n\log^2(a+bx)}{b^2g}-\frac{163B^2(bc-ad)\log\left(-\frac{bc-ad}{d(a+bx)}\right.}{b^2g}$$

$$=-\frac{163AB(bc-ad)n\log^2(a+bx)}{b^2g}-\frac{163aB^2dn^2\log^2(a+bx)}{b^2g}-\frac{1}{}$$

$$=-\frac{163AB(bc-ad)n\log^2(a+bx)}{b^2g}-\frac{163aB^2dn^2\log^2(a+bx)}{b^2g}-\frac{1}{}$$

Mathematica [B] time = 1.96, size = 742, normalized size = 2.42

$$i\left(-3Bn\left(-2ad\text{Li}_2\left(\frac{b(c+dx)}{bc-ad}\right)+2\left(\log\left(\frac{c}{d}+x\right)\left(-ad\log\left(\frac{d(a+bx)}{ad-bc}\right)+ad\log(a+bx)+bc\right)+(ad\log(a+bx)-bdx\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b
*g*x),x]
```

```
[Out] (i*(3*b*d*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c +
d*x)])^2 + 3*(b*c - a*d)*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
 - B*n*Log[(a + b*x)/(c + d*x)])^2 - 3*B*n*(A + B*Log[e*((a + b*x)/(c + d*x
))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(a*d*Log[a/b + x]^2 - 2*a*d*Log[a/b +
 x]*(1 + Log[a + b*x]) + 2*(-(b*c) + a*d + Log[c/d + x]*(b*c + a*d*Log[a +
b*x] - a*d*Log[(d*(a + b*x))/(-(b*c) + a*d)]) + (-(b*d*x) + a*d*Log[a + b*x
])*Log[(a + b*x)/(c + d*x)]) - 2*a*d*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])
 + 3*b*B*c*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c +
 d*x)])*(Log[a/b + x]^2 - 2*Log[a + b*x]*(Log[a/b + x] - Log[c/d + x] - Log
[(a + b*x)/(c + d*x)]) - 2*(Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)]
+ PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + B^2*n^2*(Log[(a + b*x)/(c + d*x
)]*(-(a*d*Log[(a + b*x)/(c + d*x)]^2) + 6*(b*c - a*d)*Log[(b*c - a*d)/(b*c
+ b*d*x)] + 3*d*Log[(a + b*x)/(c + d*x)]*(a + b*x + a*Log[(b*c - a*d)/(b*c
+ b*d*x)])) + 6*(b*c - a*d + a*d*Log[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a
 + b*x))/(b*(c + d*x))] - 6*a*d*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))]) -
3*b*B^2*c*n^2*(Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)]^2
 - 2*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 2*P
olyLog[3, (b*(c + d*x))/(d*(a + b*x))])))/(3*b^2*g)
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2dix+A^2ci+\left(B^2dix+B^2ci\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2+2\,(ABdix+ABci)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{bgx+ag},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, alg
orithm="fricas")
```

```
[Out] integral((A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log(e*((b*x + a)/(d*x
 + c))^n)^2 + 2*(A*B*d*i*x + A*B*c*i)*log(e*((b*x + a)/(d*x + c))^n))/(b*g*
x + a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int\frac{(dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{bgx+ag}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g),x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2di\left(\frac{x}{bg}-\frac{a\log(bx+a)}{b^2g}\right)+\frac{A^2ci\log\left(bgx+ag\right)}{bg}+\frac{\left(B^2bdix+(bci-adi)B^2\log(bx+a)\right)\log\left((dx+c)^n\right)^2}{b^2g}-\int-\frac{B^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, alg
orithm="maxima")
```

```
[Out] A^2*d*i*(x/(b*g) - a*log(b*x + a)/(b^2*g)) + A^2*c*i*log(b*g*x + a*g)/(b*g)
 + (B^2*b*d*i*x + (b*c*i - a*d*i)*B^2*log(b*x + a))*log((d*x + c)^n)^2/(b^2
*g) - integrate(-(B^2*b^2*c^2*i*log(e)^2 + 2*A*B*b^2*c^2*i*log(e) + (B^2*b^
2*d^2*i*log(e)^2 + 2*A*B*b^2*d^2*i*log(e))*x^2 + (B^2*b^2*d^2*i*x^2 + 2*B^2
*b^2*c*d*i*x + B^2*b^2*c^2*i)*log((b*x + a)^n)^2 + 2*(B^2*b^2*c*d*i*log(e)^
2 + 2*A*B*b^2*c*d*i*log(e))*x + 2*(B^2*b^2*c^2*i*log(e) + A*B*b^2*c^2*i + (
B^2*b^2*d^2*i*log(e) + A*B*b^2*d^2*i)*x^2 + 2*(B^2*b^2*c*d*i*log(e) + A*B*b
^2*c*d*i)*x)*log((b*x + a)^n) - 2*(B^2*b^2*c^2*i*log(e) + A*B*b^2*c^2*i + (
(i*n + i*log(e))*B^2*b^2*d^2 + A*B*b^2*d^2*i)*x^2 + (2*A*B*b^2*c*d*i + (a*b
*d^2*i*n + 2*b^2*c*d*i*log(e))*B^2)*x + ((b^2*c*d*i*n - a*b*d^2*i*n)*B^2*x
+ (a*b*c*d*i*n - a^2*d^2*i*n)*B^2)*log(b*x + a) + (B^2*b^2*d^2*i*x^2 + 2*B^
2*b^2*c*d*i*x + B^2*b^2*c^2*i)*log((b*x + a)^n))*log((d*x + c)^n))/(b^3*d*g
*x^2 + a*b^2*c*g + (b^3*c*g + a*b^2*d*g)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2}{a\,g+b\,g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x),
x)
```

```
[Out] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x),
 x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{i\left(\int\frac{A^2c}{a+bx}\,dx+\int\frac{A^2dx}{a+bx}\,dx+\int\frac{B^2c\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)^2}{a+bx}\,dx+\int\frac{2ABc\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)}{a+bx}\,dx+\int\frac{B^2dx\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)^2}{a+bx}\,dx+\right.}{g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g),x)
```

```
[Out] i*(Integral(A**2*c/(a + b*x), x) + Integral(A**2*d*x/(a + b*x), x) + Integr
al(B**2*c*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(a + b*x), x) + Integr
al(2*A*B*c*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(a + b*x), x) + Integral
(B**2*d*x*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(a + b*x), x) + Integr
al(2*A*B*d*x*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(a + b*x), x))/g
```

3.164 $\int \frac{(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=261

$$\frac{2BdinLi_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g^2}-\frac{di\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{b^2g^2}-\frac{2Bin(c+dx)\left(B\log\right.}{bg^2(a}$$

```
[Out] -2*B^2*i*n^2*(d*x+c)/b/g^2/(b*x+a)-2*B*i*n*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+
c))^n))/b/g^2/(b*x+a)-i*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b/g^2/(b*
x+a)-d*i*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^2/g^
2+2*B*d*i*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*polylog(2,b*(d*x+c)/d/(b*x+a))/
b^2/g^2+2*B^2*d*i*n^2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^2/g^2
```

Rubi [B] time = 2.95, antiderivative size = 766, normalized size of antiderivative = 2.93, number of steps used = 40, number of rules used = 20, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.465, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{2ABdinPolyLog\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2g^2}+\frac{2B^2dinPolyLog\left(2,\frac{bc-ad}{d(a+bx)}+1\right)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^2g^2}-\frac{2B^2din^2PolyLog\left(2,-\frac{d(a+bx)}{bc-ad}\right.}{b^2g^2}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^
2,x]
```

```
[Out] (-2*B^2*(b*c - a*d)*i*n^2)/(b^2*g^2*(a + b*x)) - (2*B^2*d*i*n^2*Log[a + b*x
])/(b^2*g^2) - (A*B*d*i*n*Log[a + b*x]^2)/(b^2*g^2) + (B^2*d*i*n^2*Log[a +
b*x]^2)/(b^2*g^2) - (B^2*d*i*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*((a +
b*x)/(c + d*x))^n]^2)/(b^2*g^2) - (B^2*d*i*Log[a + b*x]*Log[e*((a + b*x)/(c
 + d*x))^n]^2)/(b^2*g^2) - (2*B*(b*c - a*d)*i*n*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n]))/(b^2*g^2*(a + b*x)) - (2*B*d*i*n*Log[a + b*x]*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n]))/(b^2*g^2) - ((b*c - a*d)*i*(A + B*Log[e*((a + b*x)/
(c + d*x))^n])^2)/(b^2*g^2*(a + b*x)) + (d*i*Log[a + b*x]*(A + B*Log[e*((a
+ b*x)/(c + d*x))^n])^2)/(b^2*g^2) + (2*B^2*d*i*n^2*Log[c + d*x])/(b^2*g^2)
 - (2*B^2*d*i*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^2*g^2)
 + (2*B*d*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(b^2*g^2
) + (B^2*d*i*n^2*Log[c + d*x]^2)/(b^2*g^2) + (2*A*B*d*i*n*Log[a + b*x]*Log[
(b*(c + d*x))/(b*c - a*d)])/(b^2*g^2) - (2*B^2*d*i*n^2*Log[a + b*x]*Log[(b*
(c + d*x))/(b*c - a*d)])/(b^2*g^2) + (2*A*B*d*i*n*PolyLog[2, -((d*(a + b*x)
)/(b*c - a*d))])/(b^2*g^2) - (2*B^2*d*i*n^2*PolyLog[2, -((d*(a + b*x))/(b*c
 - a*d))])/(b^2*g^2) - (2*B^2*d*i*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]
)/(b^2*g^2) + (2*B^2*d*i*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 + (b
*c - a*d)/(d*(a + b*x))])/(b^2*g^2) + (2*B^2*d*i*n^2*PolyLog[3, 1 + (b*c -
a*d)/(d*(a + b*x))])/(b^2*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
```

```
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(164c+164dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2}\,dx = \int \left(\frac{164(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{bg^2(a+bx)^2} + \frac{164d\left(A+B\log\right.}{bg^2(a\right.}$$

$$= \frac{(164d)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}dx}{bg^2} + \frac{(164(bc-ad))\int \frac{\left(A+B\log\left(e\right.\right.}{(a+b}}{bg^2}$$

$$= -\frac{164(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^2(a+bx)} + \frac{164d\log(a+bx)}{}$$

$$= -\frac{164(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^2(a+bx)} + \frac{164d\log(a+bx)}{}$$

$$= -\frac{164(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^2(a+bx)} + \frac{164d\log(a+bx)}{}$$

$$= -\frac{164(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^2(a+bx)} + \frac{164d\log(a+bx)}{}$$

$$= -\frac{328B(bc-ad)n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^2g^2(a+bx)} - \frac{328Bdn\log(a+}{}$$

$$= -\frac{164B^2d\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^2g^2} - \frac{328B(bc-ad)n\left(A\right.}{b^2g^2(}$$

$$= -\frac{164B^2d\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^2g^2} - \frac{164B^2d\log(a+b}{b}$$

$$= -\frac{328B^2(bc-ad)n^2}{b^2g^2(a+bx)} - \frac{328B^2dn^2\log(a+bx)}{b^2g^2} - \frac{164ABdn\log}{b^2g}$$

$$= -\frac{328B^2(bc-ad)n^2}{b^2g^2(a+bx)} - \frac{328B^2dn^2\log(a+bx)}{b^2g^2} - \frac{164ABdn\log}{b^2g}$$

$$= -\frac{328B^2(bc-ad)n^2}{b^2g^2(a+bx)} - \frac{328B^2dn^2\log(a+bx)}{b^2g^2} - \frac{164ABdn\log}{b^2g}$$

Mathematica [B] time = 3.21, size = 1556, normalized size = 5.96

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b
*g*x)^2,x]
```

```
[Out] (i*((-3*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*
x)/(c + d*x)])^2)/(a + b*x) + 3*d*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c +
 d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 + (6*b*B*c*n*(-A - B*Log[e*((a
+ b*x)/(c + d*x))^n] + B*n*Log[(a + b*x)/(c + d*x)])*(-(d*(a + b*x)*Log[c/d
 + x]) + d*(a + b*x)*Log[(d*(a + b*x))/(-(b*c) + a*d)] + (b*c - a*d)*(1 + L
og[(a + b*x)/(c + d*x)])))/((b*c - a*d)*(a + b*x)) + (3*b*B^2*c*n^2*(-2*b*c
 + 2*a*d - 2*d*(a + b*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*
x)] - 2*d*(a + b*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - (b*c - a*d)*Log
[(a + b*x)/(c + d*x)]^2 + 2*d*(a + b*x)*Log[c + d*x] - 2*d*(a + b*x)*Log[(a
 + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + d*(a + b*x)*(Log[a + b*
x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a +
 b*x))/(-(b*c) + a*d)]) + d*(a + b*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Lo
g[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyL
og[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(a + b*x)) + 3*B*d*n*(A +
B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(Log[a/b +
 x]^2 - 2*Log[a/b + x]*Log[a + b*x] - 2*Log[c/d + x]*Log[(d*(a + b*x))/(-(b
*c) + a*d)] + 2*Log[a + b*x]*((a*d)/(b*c - a*d) + Log[c/d + x] + Log[(a + b
*x)/(c + d*x)]) + 2*a*((a + b*x)^(-1) + Log[(a + b*x)/(c + d*x)]/(a + b*x)
+ (d*Log[c + d*x])/(-(b*c) + a*d)) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
]) + (B^2*d*n^2*(6*b*c - 6*a*d - (6*b^2*c*x)/(a + b*x) + (6*a*b*d*x)/(a + b
*x) + 6*a*d*Log[a/b + x] + 3*b*c*Log[a/b + x]^2 - 3*a*d*Log[a/b + x]^2 - 6*
b*c*Log[c/d + x] + 6*b*c*Log[a + b*x] - 6*a*d*Log[a + b*x] - 6*b*c*Log[a/b
+ x]*Log[a + b*x] + 6*a*d*Log[a/b + x]*Log[a + b*x] + 6*b*c*Log[c/d + x]*Lo
g[a + b*x] - 6*a*d*Log[c/d + x]*Log[a + b*x] - 6*b*c*Log[c/d + x]*Log[(d*(a
 + b*x))/(-(b*c) + a*d)] + 6*a*d*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a
*d)] - (6*b*(b*c - a*d)*x*Log[(a + b*x)/(c + d*x)])/(a + b*x) + 6*b*c*Log[a
 + b*x]*Log[(a + b*x)/(c + d*x)] - 6*a*d*Log[a + b*x]*Log[(a + b*x)/(c + d*
x)] + 3*a*d*Log[(a + b*x)/(c + d*x)]^2 + 3*b*d*x*Log[(a + b*x)/(c + d*x)]^2
 - (3*b^2*x*(c + d*x)*Log[(a + b*x)/(c + d*x)]^2)/(a + b*x) - 3*b*c*Log[(-(
b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)]^2 - a*d*Log[(a + b*x)/(
c + d*x)]^3 + 6*b*c*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)]
 - 6*a*d*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 3*a*d*Lo
g[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*(b*c - a*d + a*
d*Log[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 6*(b*
c - a*d)*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 6*b*c*Log[(a + b*x)/(c + d
*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 6*a*d*PolyLog[3, (d*(a + b*x
))/(b*(c + d*x))] + 6*b*c*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))]))/(b*c -
a*d)))/(3*b^2*g^2)
```

fricas [F] time = 0.99, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2dix + A^2ci + \left(B^2dix + B^2ci\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2 + 2\left(ABdix + ABci\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{b^2g^2x^2 + 2\,abg^2x + a^2g^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, a
lgorithm="fricas")
```

```
[Out] integral((A^2*d*i*x + A^2*c*i + (B^2*d*i*x + B^2*c*i)*log(e*((b*x + a)/(d*x
 + c))^n)^2 + 2*(A*B*d*i*x + A*B*c*i)*log(e*((b*x + a)/(d*x + c))^n))/(b^2*
g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-2\,ABcin\left(\frac{1}{b^{2}g^{2}x+abg^{2}}+\frac{d\log\left(bx+a\right)}{\left(b^{2}c-abd\right)g^{2}}-\frac{d\log\left(dx+c\right)}{\left(b^{2}c-abd\right)g^{2}}\right)+A^{2}di\left(\frac{a}{b^{3}g^{2}x+ab^{2}g^{2}}+\frac{\log\left(bx+a\right)}{b^{2}g^{2}}\right)-\frac{2\,ABci\log}{b^{2}g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x, a
lgorithm="maxima")
```

```
[Out] -2*A*B*c*i*n*(1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)*g^2
) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2)) + A^2*d*i*(a/(b^3*g^2*x + a*b^2*g
^2) + log(b*x + a)/(b^2*g^2)) - 2*A*B*c*i*log(e*(b*x/(d*x + c) + a/(d*x + c
))^n)/(b^2*g^2*x + a*b*g^2) - A^2*c*i/(b^2*g^2*x + a*b*g^2) - ((b*c*i - a*d
*i)*B^2 - (B^2*b*d*i*x + B^2*a*d*i)*log(b*x + a))*log((d*x + c)^n)^2/(b^3*g
^2*x + a*b^2*g^2) - integrate(-(B^2*b^2*c^2*i*log(e)^2 + (B^2*b^2*d^2*i*log
(e)^2 + 2*A*B*b^2*d^2*i*log(e))*x^2 + (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*
x + B^2*b^2*c^2*i)*log((b*x + a)^n)^2 + 2*(B^2*b^2*c*d*i*log(e)^2 + A*B*b^2
*c*d*i*log(e))*x + 2*(B^2*b^2*c^2*i*log(e) + (B^2*b^2*d^2*i*log(e) + A*B*b^
2*d^2*i)*x^2 + (2*B^2*b^2*c*d*i*log(e) + A*B*b^2*c*d*i)*x)*log((b*x + a)^n)
 + 2*((a*b*c*d*i*n - a^2*d^2*i*n - b^2*c^2*i*log(e))*B^2 - (B^2*b^2*d^2*i*l
og(e) + A*B*b^2*d^2*i)*x^2 - (A*B*b^2*c*d*i + (a*b*d^2*i*n - (i*n - 2*i*log
(e))*b^2*c*d)*B^2)*x - (B^2*b^2*d^2*i*n*x^2 + 2*B^2*a*b*d^2*i*n*x + B^2*a^2
*d^2*i*n)*log(b*x + a) - (B^2*b^2*d^2*i*x^2 + 2*B^2*b^2*c*d*i*x + B^2*b^2*c
^2*i)*log((b*x + a)^n))*log((d*x + c)^n))/(b^4*d*g^2*x^3 + a^2*b^2*c*g^2 +
(b^4*c*g^2 + 2*a*b^3*d*g^2)*x^2 + (2*a*b^3*c*g^2 + a^2*b^2*d*g^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,i+d\,i\,x\right)\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^2}{{\left(a\,g+b\,g\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^
2,x)
```

```
[Out] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**2,x)
[Out] Timed out
```

3.165 $\int \frac{(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3}\,dx$

Optimal. Leaf size=151

$$-\frac{i(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2g^3(a+bx)^2(bc-ad)}-\frac{Bin(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^3(a+bx)^2(bc-ad)}-\frac{B^2in^2(c+dx)^2}{4g^3(a+bx)^2(bc-ad)}$$

```
[Out] -1/4*B^2*i*n^2*(d*x+c)^2/(-a*d+b*c)/g^3/(b*x+a)^2-1/2*B*i*n*(d*x+c)^2*(A+B*
ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/g^3/(b*x+a)^2-1/2*i*(d*x+c)^2*(A+B*ln
(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/g^3/(b*x+a)^2
```

Rubi [C] time = 2.06, antiderivative size = 691, normalized size of antiderivative = 4.58, number of steps used = 54, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{B^2d^2in^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{b^2g^3(bc-ad)}-\frac{B^2d^2in^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{b^2g^3(bc-ad)}-\frac{Bd^2in\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^2g^3(bc-ad)}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^
3,x]
```

```
[Out] -(B^2*(b*c - a*d)*i*n^2)/(4*b^2*g^3*(a + b*x)^2) - (B^2*d*i*n^2)/(2*b^2*g^3
*(a + b*x)) - (B^2*d^2*i*n^2*Log[a + b*x])/(2*b^2*(b*c - a*d)*g^3) + (B^2*d
^2*i*n^2*Log[a + b*x]^2)/(2*b^2*(b*c - a*d)*g^3) - (B*(b*c - a*d)*i*n*(A +
B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^2*g^3*(a + b*x)^2) - (B*d*i*n*(A +
B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*g^3*(a + b*x)) - (B*d^2*i*n*Log[a +
 b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^2*(b*c - a*d)*g^3) - ((b*c
 - a*d)*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^2*g^3*(a + b*x)^2)
 - (d*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^2*g^3*(a + b*x)) + (B^
2*d^2*i*n^2*Log[c + d*x])/(2*b^2*(b*c - a*d)*g^3) - (B^2*d^2*i*n^2*Log[-((d
*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^2*(b*c - a*d)*g^3) + (B*d^2*i*n*
(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(b^2*(b*c - a*d)*g^3)
+ (B^2*d^2*i*n^2*Log[c + d*x]^2)/(2*b^2*(b*c - a*d)*g^3) - (B^2*d^2*i*n^2*L
og[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^2*(b*c - a*d)*g^3) - (B^2*d^
2*i*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^2*(b*c - a*d)*g^3) - (
B^2*d^2*i*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^2*(b*c - a*d)*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(165c+165dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3}\,dx = \int \left(\frac{165(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{bg^3(a+bx)^3} + \frac{165d\left(A+B\,\mathrm{lo}\right.}{bg^3(a}\right.$$

$$= \frac{(165d)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(a+bx)^2}\,dx}{bg^3} + \frac{(165(bc-ad))\int \frac{\left(A+B\log\left(e\left(\right.\right.\right.}{(a+b}}{bg^3}$$

$$= -\frac{165(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{2b^2g^3(a+bx)^2} - \frac{165d\left(A+B\log\right.}{b^2g^3(a+}$$

$$= -\frac{165(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{2b^2g^3(a+bx)^2} - \frac{165d\left(A+B\log\right.}{b^2g^3(a+}$$

$$= -\frac{165(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{2b^2g^3(a+bx)^2} - \frac{165d\left(A+B\log\right.}{b^2g^3(a+}$$

$$= -\frac{165(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{2b^2g^3(a+bx)^2} - \frac{165d\left(A+B\log\right.}{b^2g^3(a+}$$

$$= -\frac{165B(bc-ad)n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{2b^2g^3(a+bx)^2} - \frac{165Bdn\left(A+B\right.}{b^2g^3(}$$

$$= -\frac{165B(bc-ad)n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{2b^2g^3(a+bx)^2} - \frac{165Bdn\left(A+B\right.}{b^2g^3(}$$

$$= -\frac{165B(bc-ad)n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{2b^2g^3(a+bx)^2} - \frac{165Bdn\left(A+B\right.}{b^2g^3(}$$

$$= -\frac{165B^2(bc-ad)n^2}{4b^2g^3(a+bx)^2} - \frac{165B^2dn^2}{2b^2g^3(a+bx)} - \frac{165B^2d^2n^2\log(a+b}{2b^2(bc-ad)g^3}$$

$$= -\frac{165B^2(bc-ad)n^2}{4b^2g^3(a+bx)^2} - \frac{165B^2dn^2}{2b^2g^3(a+bx)} - \frac{165B^2d^2n^2\log(a+b}{2b^2(bc-ad)g^3}$$

$$= -\frac{165B^2(bc-ad)n^2}{4b^2g^3(a+bx)^2} - \frac{165B^2dn^2}{2b^2g^3(a+bx)} - \frac{165B^2d^2n^2\log(a+b}{2b^2(bc-ad)g^3}$$

Mathematica [C] time = 0.91, size = 801, normalized size = 5.30

$$-\frac{i\left(2(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 - 4d(ad-bc)(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 + 4Bdn(a+bx)\left(2(bc\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b
*g*x)^3,x]
```

```
[Out] -1/4*(i*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - 4*d*(-(
b*c) + a*d)*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 4*B*d*n*(a
 + b*x)*(2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*d*(a + b*
x)*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*d*(a + b*x)*(A +
 B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 2*B*n*(b*c - a*d + d*(a +
 b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - B*d*n*(a + b*x)*(Log[a + b
*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a
+ b*x))/(-(b*c) + a*d)]) + B*d*n*(a + b*x)*((2*Log[(d*(a + b*x))/(-(b*c) +
a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
])) + B*n*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d*(-(
b*c) + a*d)*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 4*d^2*(a + b
*x)^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d^2*(a + b*x)
^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 4*B*d*n*(a + b*x)*
(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + B*n*((b
*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x]
 + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*n*(a + b*x)^2*(Log[a + b*x]*(L
og[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x)
)/(-(b*c) + a*d)]) - 2*B*d^2*n*(a + b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) +
a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)
]))))/(b^2*(b*c - a*d)*g^3*(a + b*x)^2)
```

fricas [B] time = 0.98, size = 600, normalized size = 3.97

$$-\frac{\left(B^2b^2c^2-B^2a^2d^2\right)in^2+2\left(ABb^2c^2-ABa^2d^2\right)in+2\left(2\left(B^2b^2cd-B^2abd^2\right)ix+\left(B^2b^2c^2-B^2a^2d^2\right)i\right)\log(e)^2+2(\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x, a
lgorithm="fricas")
```

```
[Out] -1/4*((B^2*b^2*c^2 - B^2*a^2*d^2)*i*n^2 + 2*(A*B*b^2*c^2 - A*B*a^2*d^2)*i*n
 + 2*(2*(B^2*b^2*c*d - B^2*a*b*d^2)*i*x + (B^2*b^2*c^2 - B^2*a^2*d^2)*i)*lo
g(e)^2 + 2*(B^2*b^2*d^2*i*n^2*x^2 + 2*B^2*b^2*c*d*i*n^2*x + B^2*b^2*c^2*i*n
^2)*log((b*x + a)/(d*x + c))^2 + 2*(A^2*b^2*c^2 - A^2*a^2*d^2)*i + 2*((B^2*
b^2*c*d - B^2*a*b*d^2)*i*n^2 + 2*(A*B*b^2*c*d - A*B*a*b*d^2)*i*n + 2*(A^2*b
^2*c*d - A^2*a*b*d^2)*i)*x + 2*((B^2*b^2*c^2 - B^2*a^2*d^2)*i*n + 2*(A*B*b^
2*c^2 - A*B*a^2*d^2)*i + 2*((B^2*b^2*c*d - B^2*a*b*d^2)*i*n + 2*(A*B*b^2*c*
d - A*B*a*b*d^2)*i)*x + 2*(B^2*b^2*d^2*i*n*x^2 + 2*B^2*b^2*c*d*i*n*x + B^2*
b^2*c^2*i*n)*log((b*x + a)/(d*x + c)))*log(e) + 2*(B^2*b^2*c^2*i*n^2 + 2*A*
B*b^2*c^2*i*n + (B^2*b^2*d^2*i*n^2 + 2*A*B*b^2*d^2*i*n)*x^2 + 2*(B^2*b^2*c*
d*i*n^2 + 2*A*B*b^2*c*d*i*n)*x)*log((b*x + a)/(d*x + c)))/((b^5*c - a*b^4*d
)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3)
```

giac [A] time = 18.43, size = 185, normalized size = 1.23

$$-\frac{1}{4}\left(\frac{2\,(dx+c)^2B^2in^2\log\left(\frac{bx+a}{dx+c}\right)^2}{(bx+a)^2g^3}+\frac{2\left(B^2in^2+2\,ABin+2\,B^2in\right)(dx+c)^2\log\left(\frac{bx+a}{dx+c}\right)}{(bx+a)^2g^3}+\frac{\left(B^2in^2+2\,ABin+2\,B^2in\cdots\right.}{(\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x, a
lgorithm="giac")
```

```
[Out] -1/4*(2*(d*x + c)^2*B^2*i*n^2*log((b*x + a)/(d*x + c))^2/((b*x + a)^2*g^3)
+ 2*(B^2*i*n^2 + 2*A*B*i*n + 2*B^2*i*n)*(d*x + c)^2*log((b*x + a)/(d*x + c)
)/((b*x + a)^2*g^3) + (B^2*i*n^2 + 2*A*B*i*n + 2*B^2*i*n + 2*A^2*i + 4*A*B*
i + 2*B^2*i)*(d*x + c)^2/((b*x + a)^2*g^3))*(b*c/(b*c - a*d)^2 - a*d/(b*c -
 a*d)^2)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)
```

maxima [B] time = 2.24, size = 2017, normalized size = 13.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x, a
lgorithm="maxima")
```

```
[Out] -1/2*A*B*d*i*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d
)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) +
2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3
) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)
*g^3)) + 1/2*A*B*c*i*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2
+ 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*log(b*
x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)/((b^3
*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3)) - 1/2*(2*b*x + a)*B^2*d*i*log(e*(b*x/
(d*x + c) + a/(d*x + c))^n)^2/(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) +
 1/4*(2*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*x^2 + 2*(a*b^3*c
- a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*log(b*x + a)/((b^3*
c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)/((b^3*c^2 - 2*a*b^
2*c*d + a^2*b*d^2)*g^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - (b^2*c^2
- 8*a*b*c*d + 7*a^2*d^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x +
 a)^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(d*x + c)^2 - 6*(b^2*c*d
 - a*b*d^2)*x - 6*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a) + 2*(3
*b^2*d^2*x^2 + 6*a*b*d^2*x + 3*a^2*d^2 - 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2
*d^2)*log(b*x + a))*log(d*x + c))*n^2/(a^2*b^3*c^2*g^3 - 2*a^3*b^2*c*d*g^3
+ a^4*b*d^2*g^3 + (b^5*c^2*g^3 - 2*a*b^4*c*d*g^3 + a^2*b^3*d^2*g^3)*x^2 + 2
*(a*b^4*c^2*g^3 - 2*a^2*b^3*c*d*g^3 + a^3*b^2*d^2*g^3)*x))*B^2*c*i - 1/4*(2
*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d)*g^3*x^2 +
2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) + 2*(2*b*c*d -
 a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3) - 2*(2*b*c
*d - a*d^2)*log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3))*log(e
*(b*x/(d*x + c) + a/(d*x + c))^n) + (7*a*b^2*c^2 - 8*a^2*b*c*d + a^3*d^2 -
2*(2*a^2*b*c*d - a^3*d^2 + (2*b^3*c*d - a*b^2*d^2)*x^2 + 2*(2*a*b^2*c*d - a
^2*b*d^2)*x)*log(b*x + a)^2 - 2*(2*a^2*b*c*d - a^3*d^2 + (2*b^3*c*d - a*b^2
*d^2)*x^2 + 2*(2*a*b^2*c*d - a^2*b*d^2)*x)*log(d*x + c)^2 + 2*(4*b^3*c^2 -
5*a*b^2*c*d + a^2*b*d^2)*x + 2*(4*a^2*b*c*d - a^3*d^2 + (4*b^3*c*d - a*b^2*
d^2)*x^2 + 2*(4*a*b^2*c*d - a^2*b*d^2)*x)*log(b*x + a) - 2*(4*a^2*b*c*d - a
^3*d^2 + (4*b^3*c*d - a*b^2*d^2)*x^2 + 2*(4*a*b^2*c*d - a^2*b*d^2)*x - 2*(2
*a^2*b*c*d - a^3*d^2 + (2*b^3*c*d - a*b^2*d^2)*x^2 + 2*(2*a*b^2*c*d - a^2*b
*d^2)*x)*log(b*x + a))*log(d*x + c))*n^2/(a^2*b^4*c^2*g^3 - 2*a^3*b^3*c*d*g
```

```
^3 + a^4*b^2*d^2*g^3 + (b^6*c^2*g^3 - 2*a*b^5*c*d*g^3 + a^2*b^4*d^2*g^3)*x^
2 + 2*(a*b^5*c^2*g^3 - 2*a^2*b^4*c*d*g^3 + a^3*b^3*d^2*g^3)*x))*B^2*d*i - (
2*b*x + a)*A*B*d*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^3*x^2 + 2*
a*b^3*g^3*x + a^2*b^2*g^3) - 1/2*B^2*c*i*log(e*(b*x/(d*x + c) + a/(d*x + c)
)^n)^2/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*(2*b*x + a)*A^2*d*i/
(b^4*g^3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - A*B*c*i*log(e*(b*x/(d*x + c)
+ a/(d*x + c))^n)/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*A^2*c*i/(
b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3)
```

mupad [B] time = 6.82, size = 561, normalized size = 3.72

$$-\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2\left(\frac{\frac{B^2\,c\,i}{2\,b}+\frac{B^2\,d\,i\,x}{b}+\frac{B^2\,a\,d\,i}{2\,b^2}}{a^2\,g^3+2\,a\,b\,g^3\,x+b^2\,g^3\,x^2}-\frac{B^2\,d^2\,i}{2\,b^2\,g^3\,(a\,d-b\,c)}\right)-\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\left(\frac{A\,B\,a\,d\,i+A\,B\,b\,c\,i-B}{a^2\,b^2\,g^3+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^
3,x)
```

```
[Out] - log(e*((a + b*x)/(c + d*x))^n)^2*(((B^2*c*i)/(2*b) + (B^2*d*i*x)/b + (B^2
*a*d*i)/(2*b^2))/(a^2*g^3 + b^2*g^3*x^2 + 2*a*b*g^3*x) - (B^2*d^2*i)/(2*b^2
*g^3*(a*d - b*c))) - log(e*((a + b*x)/(c + d*x))^n)*((A*B*a*d*i + A*B*b*c*i
 - B^2*a*d*i*n + B^2*b*c*i*n + 2*A*B*b*d*i*x)/(a^2*b^2*g^3 + b^4*g^3*x^2 +
2*a*b^3*g^3*x) + (B^2*d^2*i*((a*b^2*g^3*n*(a*d - b*c))/(2*d) + (b^3*g^3*n*x
*(a*d - b*c))/d + (b^2*g^3*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2)))/(b^2*g^3*
(a*d - b*c)*(a^2*b^2*g^3 + b^4*g^3*x^2 + 2*a*b^3*g^3*x))) - (x*(2*A^2*b*d*i
 + B^2*b*d*i*n^2 + 2*A*B*b*d*i*n) + A^2*a*d*i + A^2*b*c*i + (B^2*a*d*i*n^2)
/2 + (B^2*b*c*i*n^2)/2 + A*B*a*d*i*n + A*B*b*c*i*n)/(2*a^2*b^2*g^3 + 2*b^4*
g^3*x^2 + 4*a*b^3*g^3*x) - (B*d^2*i*n*atan((B*d^2*i*n*(2*A + B*n)*((b^3*c*g
^3 + a*b^2*d*g^3)/(b^2*g^3) + 2*b*d*x)*1i)/((a*d - b*c)*(B^2*d^2*i*n^2 + 2*
A*B*d^2*i*n)))*(2*A + B*n)*1i)/(b^2*g^3*(a*d - b*c))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{i\left(\int\frac{A^2c}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx+\int\frac{A^2dx}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx+\int\frac{B^2c\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)^2}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx+\int\frac{2ABc\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)}{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx+\right.}{g^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**3,x)
```

```
[Out] i*(Integral(A**2*c/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + In
tegral(A**2*d*x/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integ
ral(B**2*c*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(a**3 + 3*a**2*b*x +
3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*A*B*c*log(e*(a/(c + d*x) + b*x/
(c + d*x))**n)/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x) + Integr
al(B**2*d*x*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(a**3 + 3*a**2*b*x +
 3*a*b**2*x**2 + b**3*x**3), x) + Integral(2*A*B*d*x*log(e*(a/(c + d*x) + b
*x/(c + d*x))**n)/(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3), x))/g**3
```

3.166 $\int \frac{(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^4}\,dx$

Optimal. Leaf size=307

$$-\frac{bi(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{3g^4(a+bx)^3(bc-ad)^2}-\frac{2bBin(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{9g^4(a+bx)^3(bc-ad)^2}+\frac{di(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^{n}\right.\right.}{2g^4(a+bx)^2(bc-ad)^2}$$

```
[Out] 1/4*B^2*d*i*n^2*(d*x+c)^2/(-a*d+b*c)^2/g^4/(b*x+a)^2-2/27*b*B^2*i*n^2*(d*x+
c)^3/(-a*d+b*c)^2/g^4/(b*x+a)^3+1/2*B*d*i*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d
*x+c))^n))/(-a*d+b*c)^2/g^4/(b*x+a)^2-2/9*b*B*i*n*(d*x+c)^3*(A+B*ln(e*((b*x
+a)/(d*x+c))^n))/(-a*d+b*c)^2/g^4/(b*x+a)^3+1/2*d*i*(d*x+c)^2*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/g^4/(b*x+a)^2-1/3*b*i*(d*x+c)^3*(A+B*ln(e
*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/g^4/(b*x+a)^3
```

Rubi [C] time = 2.43, antiderivative size = 800, normalized size of antiderivative = 2.61, number of steps used = 62, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{B^2in^2\log^2(a+bx)d^3}{6b^2(bc-ad)^2g^4}-\frac{B^2in^2\log^2(c+dx)d^3}{6b^2(bc-ad)^2g^4}+\frac{5B^2in^2\log(a+bx)d^3}{18b^2(bc-ad)^2g^4}+\frac{Bin\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{3b^2(bc-ad)^2g^4}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^
4,x]
```

```
[Out] (-2*B^2*(b*c - a*d)*i*n^2)/(27*b^2*g^4*(a + b*x)^3) + (B^2*d*i*n^2)/(36*b^2
*g^4*(a + b*x)^2) + (5*B^2*d^2*i*n^2)/(18*b^2*(b*c - a*d)*g^4*(a + b*x)) +
(5*B^2*d^3*i*n^2*Log[a + b*x])/(18*b^2*(b*c - a*d)^2*g^4) - (B^2*d^3*i*n^2*
Log[a + b*x]^2)/(6*b^2*(b*c - a*d)^2*g^4) - (2*B*(b*c - a*d)*i*n*(A + B*Log
[e*((a + b*x)/(c + d*x))^n]))/(9*b^2*g^4*(a + b*x)^3) - (B*d*i*n*(A + B*Log
[e*((a + b*x)/(c + d*x))^n]))/(6*b^2*g^4*(a + b*x)^2) + (B*d^2*i*n*(A + B*L
og[e*((a + b*x)/(c + d*x))^n]))/(3*b^2*(b*c - a*d)*g^4*(a + b*x)) + (B*d^3*
i*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^2*(b*c - a*d)
^2*g^4) - ((b*c - a*d)*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*b^2*g
^4*(a + b*x)^3) - (d*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^2*g^4
*(a + b*x)^2) - (5*B^2*d^3*i*n^2*Log[c + d*x])/(18*b^2*(b*c - a*d)^2*g^4) +
 (B^2*d^3*i*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*b^2*(b*c
 - a*d)^2*g^4) - (B*d^3*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c +
d*x])/(3*b^2*(b*c - a*d)^2*g^4) - (B^2*d^3*i*n^2*Log[c + d*x]^2)/(6*b^2*(b*
c - a*d)^2*g^4) + (B^2*d^3*i*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)
])/(3*b^2*(b*c - a*d)^2*g^4) + (B^2*d^3*i*n^2*PolyLog[2, -((d*(a + b*x))/(b
*c - a*d))])/(3*b^2*(b*c - a*d)^2*g^4) + (B^2*d^3*i*n^2*PolyLog[2, (b*(c +
d*x))/(b*c - a*d)])/(3*b^2*(b*c - a*d)^2*g^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
```

```
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(166c+166dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^4}\,dx = \int \left(\frac{166(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{bg^4(a+bx)^4} + \frac{166d\left(A+B\log\right.}{bg^4(a}\right.$$

$$= \frac{(166d)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(a+bx)^3}\,dx}{bg^4} + \frac{(166(bc-ad))\int \frac{\left(A+B\log\left(e\right.\right.}{(a+b}}{bg^4}$$

$$= -\frac{166(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^2g^4(a+bx)^3} - \frac{83d\left(A+B\log\left(e\right.\right.}{b^2g^4(a+b}$$

$$= -\frac{166(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^2g^4(a+bx)^3} - \frac{83d\left(A+B\log\left(e\right.\right.}{b^2g^4(a+b}$$

$$= -\frac{166(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^2g^4(a+bx)^3} - \frac{83d\left(A+B\log\left(e\right.\right.}{b^2g^4(a+b}$$

$$= -\frac{166(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^2g^4(a+bx)^3} - \frac{83d\left(A+B\log\left(e\right.\right.}{b^2g^4(a+b}$$

$$= -\frac{332B(bc-ad)n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{9b^2g^4(a+bx)^3} - \frac{83Bdn\left(A+B\right.}{3b^2g^4(a}$$

$$= -\frac{332B(bc-ad)n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{9b^2g^4(a+bx)^3} - \frac{83Bdn\left(A+B\right.}{3b^2g^4(a}$$

$$= -\frac{332B(bc-ad)n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{9b^2g^4(a+bx)^3} - \frac{83Bdn\left(A+B\right.}{3b^2g^4(a}$$

$$= -\frac{332B^2(bc-ad)n^2}{27b^2g^4(a+bx)^3} + \frac{83B^2dn^2}{18b^2g^4(a+bx)^2} + \frac{415B^2d^2n^2}{9b^2(bc-ad)g^4(a+}$$

$$= -\frac{332B^2(bc-ad)n^2}{27b^2g^4(a+bx)^3} + \frac{83B^2dn^2}{18b^2g^4(a+bx)^2} + \frac{415B^2d^2n^2}{9b^2(bc-ad)g^4(a+}$$

$$= -\frac{332B^2(bc-ad)n^2}{27b^2g^4(a+bx)^3} + \frac{83B^2dn^2}{18b^2g^4(a+bx)^2} + \frac{415B^2d^2n^2}{9b^2(bc-ad)g^4(a+}$$

Mathematica [C] time = 1.22, size = 1079, normalized size = 3.51

$$-\frac{i\left(36\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2(bc-ad)^3+54d(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2(bc-ad)^2+27Bdn(a+bx)\left(2\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b
*g*x)^4,x]
```

```
[Out] -1/108*(i*(36*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 54*d
*(b*c - a*d)^2*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 27*B*d*
n*(a + b*x)*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d*(
-(b*c) + a*d)*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 4*d^2*(a +
 b*x)^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*d^2*(a + b*
x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 4*B*d*n*(a + b*x
)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + B*n*(
(b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*
x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*n*(a + b*x)^2*(Log[a + b*x]*
(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*
x))/(-(b*c) + a*d)]) - 2*B*d^2*n*(a + b*x)^2*((2*Log[(d*(a + b*x))/(-(b*c)
+ a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*
d)])) + 2*B*n*(12*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 18
*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 36*d^2*
(b*c - a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 36*d^3*(a
+ b*x)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 36*d^3*(a +
b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 36*B*d^2*n*(a
+ b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x])
- 9*B*d*n*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(
a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*n*(2*(b*c -
 a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d
^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3*n*
(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)])
 - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*n*(a + b*x)^3*((2
*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog
[2, (b*(c + d*x))/(b*c - a*d)]))))/(b^2*(b*c - a*d)^2*g^4*(a + b*x)^3)
```

fricas [B] time = 0.74, size = 1167, normalized size = 3.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x, a
lgorithm="fricas")
```

```
[Out] -1/108*((8*B^2*b^3*c^3 - 27*B^2*a*b^2*c^2*d + 19*B^2*a^3*d^3)*i*n^2 + 6*(4*
A*B*b^3*c^3 - 9*A*B*a*b^2*c^2*d + 5*A*B*a^3*d^3)*i*n - 6*(5*(B^2*b^3*c*d^2
- B^2*a*b^2*d^3)*i*n^2 + 6*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*i*n)*x^2 + 18*(3
*(B^2*b^3*c^2*d - 2*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*i*x + (2*B^2*b^3*c^3 -
 3*B^2*a*b^2*c^2*d + B^2*a^3*d^3)*i)*log(e)^2 - 18*(B^2*b^3*d^3*i*n^2*x^3 +
 3*B^2*a*b^2*d^3*i*n^2*x^2 - 3*(B^2*b^3*c^2*d - 2*B^2*a*b^2*c*d^2)*i*n^2*x
- (2*B^2*b^3*c^3 - 3*B^2*a*b^2*c^2*d)*i*n^2)*log((b*x + a)/(d*x + c))^2 + 1
8*(2*A^2*b^3*c^3 - 3*A^2*a*b^2*c^2*d + A^2*a^3*d^3)*i - 3*((B^2*b^3*c^2*d +
 18*B^2*a*b^2*c*d^2 - 19*B^2*a^2*b*d^3)*i*n^2 - 6*(A*B*b^3*c^2*d - 6*A*B*a*
b^2*c*d^2 + 5*A*B*a^2*b*d^3)*i*n - 18*(A^2*b^3*c^2*d - 2*A^2*a*b^2*c*d^2 +
A^2*a^2*b*d^3)*i)*x - 6*(6*(B^2*b^3*c*d^2 - B^2*a*b^2*d^3)*i*n*x^2 - (4*B^2
*b^3*c^3 - 9*B^2*a*b^2*c^2*d + 5*B^2*a^3*d^3)*i*n - 6*(2*A*B*b^3*c^3 - 3*A*
B*a*b^2*c^2*d + A*B*a^3*d^3)*i - 3*((B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2 + 5*
B^2*a^2*b*d^3)*i*n + 6*(A*B*b^3*c^2*d - 2*A*B*a*b^2*c*d^2 + A*B*a^2*b*d^3)*
```

```
i)*x + 6*(B^2*b^3*d^3*i*n*x^3 + 3*B^2*a*b^2*d^3*i*n*x^2 - 3*(B^2*b^3*c^2*d
- 2*B^2*a*b^2*c*d^2)*i*n*x - (2*B^2*b^3*c^3 - 3*B^2*a*b^2*c^2*d)*i*n)*log((
b*x + a)/(d*x + c)))*log(e) + 6*((4*B^2*b^3*c^3 - 9*B^2*a*b^2*c^2*d)*i*n^2
- (5*B^2*b^3*d^3*i*n^2 + 6*A*B*b^3*d^3*i*n)*x^3 + 6*(2*A*B*b^3*c^3 - 3*A*B*
a*b^2*c^2*d)*i*n - 3*(6*A*B*a*b^2*d^3*i*n + (2*B^2*b^3*c*d^2 + 3*B^2*a*b^2*
d^3)*i*n^2)*x^2 + 3*((B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2)*i*n^2 + 6*(A*B*b^3
*c^2*d - 2*A*B*a*b^2*c*d^2)*i*n)*x)*log((b*x + a)/(d*x + c)))/((b^7*c^2 - 2
*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*
d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b
^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4)
```

giac [A] time = 25.97, size = 481, normalized size = 1.57

$$-\frac{1}{108}\left(\frac{18\left(2B^2bin^2-\frac{3(bx+a)B^2din^2}{dx+c}\right)\log\left(\frac{bx+a}{dx+c}\right)^2}{\frac{(bx+a)^3bcg^4}{(dx+c)^3}-\frac{(bx+a)^3adg^4}{(dx+c)^3}}+\frac{6\left(4B^2bin^2-\frac{9(bx+a)B^2din^2}{dx+c}+12ABbin+12B^2bin-\frac{18(bx+a)\ldots}{dx+\ldots}\right.}{\frac{(bx+a)^3bcg^4}{(dx+c)^3}-\frac{(bx+a)^3adg^4}{(dx+c)^3}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x, a
lgorithm="giac")
```

```
[Out] -1/108*(18*(2*B^2*b*i*n^2 - 3*(b*x + a)*B^2*d*i*n^2/(d*x + c))*log((b*x + a
)/(d*x + c))^2/((b*x + a)^3*b*c*g^4/(d*x + c)^3 - (b*x + a)^3*a*d*g^4/(d*x
+ c)^3) + 6*(4*B^2*b*i*n^2 - 9*(b*x + a)*B^2*d*i*n^2/(d*x + c) + 12*A*B*b*i
*n + 12*B^2*b*i*n - 18*(b*x + a)*A*B*d*i*n/(d*x + c) - 18*(b*x + a)*B^2*d*i
*n/(d*x + c))*log((b*x + a)/(d*x + c))/((b*x + a)^3*b*c*g^4/(d*x + c)^3 - (
b*x + a)^3*a*d*g^4/(d*x + c)^3) + (8*B^2*b*i*n^2 - 27*(b*x + a)*B^2*d*i*n^2
/(d*x + c) + 24*A*B*b*i*n + 24*B^2*b*i*n - 54*(b*x + a)*A*B*d*i*n/(d*x + c)
 - 54*(b*x + a)*B^2*d*i*n/(d*x + c) + 36*A^2*b*i + 72*A*B*b*i + 36*B^2*b*i
- 54*(b*x + a)*A^2*d*i/(d*x + c) - 108*(b*x + a)*A*B*d*i/(d*x + c) - 54*(b*
x + a)*B^2*d*i/(d*x + c))/((b*x + a)^3*b*c*g^4/(d*x + c)^3 - (b*x + a)^3*a*
d*g^4/(d*x + c)^3))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int\frac{(dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{(bgx+ag)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4,x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4,x)
```

maxima [B] time = 3.50, size = 3312, normalized size = 10.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x, a
lgorithm="maxima")
```

```
[Out] -1/9*A*B*c*i*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^
2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a
*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^
3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4)
 + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d
```

^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4)) - 1/18*A*B*d*i*n*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4)) - 1/6*(3*b*x + a)*B^2*d*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/54*(6*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 - 85*a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*b^2*c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a))*log(d*x + c))*n^2/(a^3*b^4*c^3*g^4 - 3*a^4*b^3*c^2*d*g^4 + 3*a^5*b^2*c*d^2*g^4 - a^6*b*d^3*g^4 + (b^7*c^3*g^4 - 3*a*b^6*c^2*d*g^4 + 3*a^2*b^5*c*d^2*g^4 - a^3*b^4*d^3*g^4)*x^3 + 3*(a*b^6*c^3*g^4 - 3*a^2*b^5*c^2*d*g^4 + 3*a^3*b^4*c*d^2*g^4 - a^4*b^3*d^3*g^4)*x^2 + 3*(a^2*b^5*c^3*g^4 - 3*a^3*b^4*c^2*d*g^4 + 3*a^4*b^3*c*d^2*g^4 - a^5*b^2*d^3*g^4)*x))*B^2*c*i - 1/108*(6*n*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (19*a*b^3*c^3 - 189*a^2*b^2*c^2*d + 189*a^3*b*c*d^2 - 19*a^4*d^3 - 6*(27*b^4*c^2*d - 32*a*b^3*c*d^2 + 5*a^2*b^2*d^3)*x^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d^2 - a^3*b*d^3)*x)*log(b*x + a)^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d^2 - a^3*b*d^3)*x)*log(d*x + c)^2 + 3*(9*b^4*c^3 - 125*a*b^3*c^2*d + 135*a^2*b^2*c*d^2 - 19*a^3*b*d^3)*x - 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + (27*b^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + 3*(27*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x)*log(b*x + a) + 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + (27*b^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + 3*(27*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x - 6*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d^2 - a^3*b*d^3)*x)*log(b*x + a))*log(d*x + c))*n^2/(a^3*b^5*c^3*g^4 - 3*a^4*b^4*c^2*d*g^4 + 3*a^5*b^3*c*d^2*g^4 - a^6*b^2*d^3*g^4 + (b^8*c^3*g^4 - 3*a*b^7*c^2*d*g^4 + 3*a^2*b^6*c*d^2*g^4 - a^3*b^5*d^3*g^4)*x^3 + 3*(a*b^7*c^3*g^4 - 3*a^2*b^6*c^2*d*g^4 + 3*a^3*b^5*c*d^2*g^4 - a^4*b^4*d^3*g^4)*x^2 + 3*(a^2*b^6*c^3*g^4 - 3*a^3*b^5*c^2*d*g^4 + 3*a^4*b^4*c*d^2*g^4 - a^5*b^3*d^3*g^4)*x))*B^2*d*i - 1/3*(3*b*x + a)*A*B*d*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*B^2*c*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) - 1/6*(3*b*x + a)*A^2*d*i/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 2/3*A*B*c*i*log(e*(b*x/(d*x + c) +

```
a/(d*x + c))^n)/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^
4) - 1/3*A^2*c*i/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g
^4)
```

mupad [B] time = 7.86, size = 993, normalized size = 3.23

$$-\frac{\frac{18\,i\,A^2\,a^2\,d^2+18\,i\,A^2\,a\,b\,c\,d-36\,i\,A^2\,b^2\,c^2+30\,i\,A\,B\,a^2\,d^2\,n+30\,i\,A\,B\,a\,b\,c\,d\,n-24\,i\,A\,B\,b^2\,c^2\,n+19\,i\,B^2\,a^2\,d^2\,n^2+19\,i\,B^2\,a\,b\,c\,d\,n^2-8\,i\,B^2\,b^2\,c^2\,n^2}{6\,(a\,d-b\,c)}+\frac{x}{}}{18\,a^3\,b^2\,g^4+54\,a^2\,b^3\,g^4\,x+54\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^
4,x)
```

```
[Out] - ((18*A^2*a^2*d^2*i - 36*A^2*b^2*c^2*i + 19*B^2*a^2*d^2*i*n^2 - 8*B^2*b^2*
c^2*i*n^2 + 30*A*B*a^2*d^2*i*n - 24*A*B*b^2*c^2*i*n + 18*A^2*a*b*c*d*i + 19
*B^2*a*b*c*d*i*n^2 + 30*A*B*a*b*c*d*i*n)/(6*(a*d - b*c)) + (x*(18*A^2*a*b*d
^2*i - 18*A^2*b^2*c*d*i + 19*B^2*a*b*d^2*i*n^2 + B^2*b^2*c*d*i*n^2 + 30*A*B
*a*b*d^2*i*n - 6*A*B*b^2*c*d*i*n))/(2*(a*d - b*c)) + (x^2*(5*B^2*b^2*d^2*i*
n^2 + 6*A*B*b^2*d^2*i*n))/(a*d - b*c))/(18*a^3*b^2*g^4 + 18*b^5*g^4*x^3 + 5
4*a^2*b^3*g^4*x + 54*a*b^4*g^4*x^2) - log(e*((a + b*x)/(c + d*x))^n)^2*(((B
^2*c*i)/(3*b) + (B^2*d*i*x)/(2*b) + (B^2*a*d*i)/(6*b^2))/(a^3*g^4 + b^3*g^4
*x^3 + 3*a*b^2*g^4*x^2 + 3*a^2*b*g^4*x) - (B^2*d^3*i)/(6*b^2*g^4*(a^2*d^2 +
 b^2*c^2 - 2*a*b*c*d))) - log(e*((a + b*x)/(c + d*x))^n)*((A*B*a*d*i + 2*A*
B*b*c*i - B^2*a*d*i*n + B^2*b*c*i*n + 3*A*B*b*d*i*x)/(3*a^3*b^2*g^4 + 3*b^5
*g^4*x^3 + 9*a^2*b^3*g^4*x + 9*a*b^4*g^4*x^2) + (B^2*d^3*i*(x*(b*((a*b^2*g^
4*n*(a*d - b*c))/d + (b^2*g^4*n*(a*d - b*c)*(3*a*d - b*c))/(2*d^2)) + (2*a*
b^3*g^4*n*(a*d - b*c))/d + (b^3*g^4*n*(a*d - b*c)*(3*a*d - b*c))/d^2) + a*(
(a*b^2*g^4*n*(a*d - b*c))/d + (b^2*g^4*n*(a*d - b*c)*(3*a*d - b*c))/(2*d^2)
) + (3*b^4*g^4*n*x^2*(a*d - b*c))/d + (b^2*g^4*n*(a*d - b*c)*(3*a^2*d^2 + b
^2*c^2 - 3*a*b*c*d))/d^3))/(3*b^2*g^4*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(3*a^
3*b^2*g^4 + 3*b^5*g^4*x^3 + 9*a^2*b^3*g^4*x + 9*a*b^4*g^4*x^2))) - (B*d^3*i
*n*atan((B*d^3*i*n*(6*A + 5*B*n)*(2*b*d*x - (b^4*c^2*g^4 - a^2*b^2*d^2*g^4)
/(b^2*g^4*(a*d - b*c)))*1i)/((a*d - b*c)*(5*B^2*d^3*i*n^2 + 6*A*B*d^3*i*n))
)*(6*A + 5*B*n)*1i)/(9*b^2*g^4*(a*d - b*c)^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**4,x)
```

```
[Out] Timed out
```

3.167 $\int \frac{(ci+dix)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^5}\,dx$

Optimal. Leaf size=475

$$-\frac{b^2i(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{4g^5(a+bx)^4(bc-ad)^3}-\frac{b^2Bin(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{8g^5(a+bx)^4(bc-ad)^3}-\frac{d^2i(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{2g^5(a+bx)^2(bc-ad)^3}$$

```
[Out] -1/4*B^2*d^2*i*n^2*(d*x+c)^2/(-a*d+b*c)^3/g^5/(b*x+a)^2+4/27*b*B^2*d*i*n^2*
(d*x+c)^3/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/32*b^2*B^2*i*n^2*(d*x+c)^4/(-a*d+b*c
)^3/g^5/(b*x+a)^4-1/2*B*d^2*i*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(
-a*d+b*c)^3/g^5/(b*x+a)^2+4/9*b*B*d*i*n*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c
))^n))/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/8*b^2*B*i*n*(d*x+c)^4*(A+B*ln(e*((b*x+a
)/(d*x+c))^n))/(-a*d+b*c)^3/g^5/(b*x+a)^4-1/2*d^2*i*(d*x+c)^2*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^5/(b*x+a)^2+2/3*b*d*i*(d*x+c)^3*(A+B*ln
(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^5/(b*x+a)^3-1/4*b^2*i*(d*x+c)^4*(
A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^5/(b*x+a)^4
```

Rubi [C] time = 2.87, antiderivative size = 892, normalized size of antiderivative = 1.88, number of steps used = 70, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.256$, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2in^2\log^2(a+bx)d^4}{12b^2(bc-ad)^3g^5}+\frac{B^2in^2\log^2(c+dx)d^4}{12b^2(bc-ad)^3g^5}-\frac{13B^2in^2\log(a+bx)d^4}{72b^2(bc-ad)^3g^5}-\frac{Bin\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)d^4}{6b^2(bc-ad)^3g^5}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x)^
5,x]
```

```
[Out] -(B^2*(b*c - a*d)*i*n^2)/(32*b^2*g^5*(a + b*x)^4) + (5*B^2*d*i*n^2)/(216*b^
2*g^5*(a + b*x)^3) + (B^2*d^2*i*n^2)/(144*b^2*(b*c - a*d)*g^5*(a + b*x)^2)
- (13*B^2*d^3*i*n^2)/(72*b^2*(b*c - a*d)^2*g^5*(a + b*x)) - (13*B^2*d^4*i*n
^2*Log[a + b*x])/(72*b^2*(b*c - a*d)^3*g^5) + (B^2*d^4*i*n^2*Log[a + b*x]^2
)/(12*b^2*(b*c - a*d)^3*g^5) - (B*(b*c - a*d)*i*n*(A + B*Log[e*((a + b*x)/(
c + d*x))^n]))/(8*b^2*g^5*(a + b*x)^4) - (B*d*i*n*(A + B*Log[e*((a + b*x)/(
c + d*x))^n]))/(18*b^2*g^5*(a + b*x)^3) + (B*d^2*i*n*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]))/(12*b^2*(b*c - a*d)*g^5*(a + b*x)^2) - (B*d^3*i*n*(A + B*
Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^2*(b*c - a*d)^2*g^5*(a + b*x)) - (B*d
^4*i*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^2*(b*c - a
*d)^3*g^5) - ((b*c - a*d)*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(4*b^
2*g^5*(a + b*x)^4) - (d*i*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*b^2*
g^5*(a + b*x)^3) + (13*B^2*d^4*i*n^2*Log[c + d*x])/(72*b^2*(b*c - a*d)^3*g^
5) - (B^2*d^4*i*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(6*b^2*
(b*c - a*d)^3*g^5) + (B*d^4*i*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[
c + d*x])/(6*b^2*(b*c - a*d)^3*g^5) + (B^2*d^4*i*n^2*Log[c + d*x]^2)/(12*b^
2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c -
 a*d)])/(6*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*n^2*PolyLog[2, -((d*(a + b*x
))/(b*c - a*d))])/(6*b^2*(b*c - a*d)^3*g^5) - (B^2*d^4*i*n^2*PolyLog[2, (b*
(c + d*x))/(b*c - a*d)])/(6*b^2*(b*c - a*d)^3*g^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(167c+167dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^5}\,dx = \int \left(\frac{167(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{bg^5(a+bx)^5} + \frac{167d\left(A+B\log\right.}{bg^5(a\right.}$$

$$= \frac{(167d)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(a+bx)^4}dx}{bg^5} + \frac{(167(bc-ad))\int \frac{\left(A+B\log\left(e\right.\right.}{(a+b}}{bg^5}$$

$$= -\frac{167(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{4b^2g^5(a+bx)^4} - \frac{167d\left(A+B\log\right.}{3b^2g^5(a+}$$

$$= -\frac{167(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{4b^2g^5(a+bx)^4} - \frac{167d\left(A+B\log\right.}{3b^2g^5(a+}$$

$$= -\frac{167(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{4b^2g^5(a+bx)^4} - \frac{167d\left(A+B\log\right.}{3b^2g^5(a+}$$

$$= -\frac{167(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{4b^2g^5(a+bx)^4} - \frac{167d\left(A+B\log\right.}{3b^2g^5(a+}$$

$$= -\frac{167B(bc-ad)n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8b^2g^5(a+bx)^4} - \frac{167Bdn\left(A+B\right.}{18b^2g^5(}$$

$$= -\frac{167B(bc-ad)n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8b^2g^5(a+bx)^4} - \frac{167Bdn\left(A+B\right.}{18b^2g^5(}$$

$$= -\frac{167B(bc-ad)n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8b^2g^5(a+bx)^4} - \frac{167Bdn\left(A+B\right.}{18b^2g^5(}$$

$$= -\frac{167B^2(bc-ad)n^2}{32b^2g^5(a+bx)^4} + \frac{835B^2dn^2}{216b^2g^5(a+bx)^3} + \frac{167B^2d^2n}{144b^2(bc-ad)g^5(}$$

$$= -\frac{167B^2(bc-ad)n^2}{32b^2g^5(a+bx)^4} + \frac{835B^2dn^2}{216b^2g^5(a+bx)^3} + \frac{167B^2d^2n}{144b^2(bc-ad)g^5(}$$

$$= -\frac{167B^2(bc-ad)n^2}{32b^2g^5(a+bx)^4} + \frac{835B^2dn^2}{216b^2g^5(a+bx)^3} + \frac{167B^2d^2n}{144b^2(bc-ad)g^5(}$$

Mathematica [C] time = 1.36, size = 1392, normalized size = 2.93

$$-\frac{i\left(216\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2(bc-ad)^4 - 288d(ad-bc)^3(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 + 16Bdn(a+bx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b
*g*x)^5,x]
```

```
[Out] -1/864*(i*(216*(b*c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - 288
*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 16
*B*d*n*(a + b*x)*(12*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) -
 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 36*d
^2*(b*c - a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 36*d^3*
(a + b*x)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 36*d^3*(a
 + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 36*B*d^2*n*
(a + b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x
]) - 9*B*d*n*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^
2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*n*(2*(b*
c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 +
6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) - 18*B*d^3
*n*(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d
)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*d^3*n*(a + b*x)^3*
((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*Poly
Log[2, (b*(c + d*x))/(b*c - a*d)])) + 3*B*n*(36*(b*c - a*d)^4*(A + B*Log[e*
((a + b*x)/(c + d*x))^n]) + 48*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[e*((
a + b*x)/(c + d*x))^n]) + 72*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n]) + 144*d^3*(-(b*c) + a*d)*(a + b*x)^3*(A + B*Log[e*((
a + b*x)/(c + d*x))^n]) - 144*d^4*(a + b*x)^4*Log[a + b*x]*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n]) + 144*d^4*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d
*x))^n])*Log[c + d*x] - 144*B*d^3*n*(a + b*x)^3*(b*c - a*d + d*(a + b*x)*Lo
g[a + b*x] - d*(a + b*x)*Log[c + d*x]) + 36*B*d^2*n*(a + b*x)^2*((b*c - a*d
)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2
*(a + b*x)^2*Log[c + d*x]) - 8*B*d*n*(a + b*x)*(2*(b*c - a*d)^3 - 3*d*(b*c
- a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[
a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) + 3*B*n*(3*(b*c - a*d)^4 + 4*d*(
-(b*c) + a*d)^3*(a + b*x) + 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 12*d^3*(-(b*c
) + a*d)*(a + b*x)^3 - 12*d^4*(a + b*x)^4*Log[a + b*x] + 12*d^4*(a + b*x)^4
*Log[c + d*x]) + 72*B*d^4*n*(a + b*x)^4*(Log[a + b*x]*(Log[a + b*x] - 2*Log
[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])
- 72*B*d^4*n*(a + b*x)^4*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*
x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))))/(b^2*(b*c -
a*d)^3*g^5*(a + b*x)^4)
```

fricas [B] time = 1.14, size = 1868, normalized size = 3.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5,x, a
lgorithm="fricas")
```

```
[Out] -1/864*((27*B^2*b^4*c^4 - 128*B^2*a*b^3*c^3*d + 216*B^2*a^2*b^2*c^2*d^2 - 1
15*B^2*a^4*d^4)*i*n^2 + 12*(13*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*i*n^2 + 12*(
A*B*b^4*c*d^3 - A*B*a*b^3*d^4)*i*n)*x^3 + 12*(9*A*B*b^4*c^4 - 32*A*B*a*b^3*
c^3*d + 36*A*B*a^2*b^2*c^2*d^2 - 13*A*B*a^4*d^4)*i*n - 6*((B^2*b^4*c^2*d^2
- 80*B^2*a*b^3*c*d^3 + 79*B^2*a^2*b^2*d^4)*i*n^2 + 12*(A*B*b^4*c^2*d^2 - 8*
A*B*a*b^3*c*d^3 + 7*A*B*a^2*b^2*d^4)*i*n)*x^2 + 72*(4*(B^2*b^4*c^3*d - 3*B^
2*a*b^3*c^2*d^2 + 3*B^2*a^2*b^2*c*d^3 - B^2*a^3*b*d^4)*i*x + (3*B^2*b^4*c^4
 - 8*B^2*a*b^3*c^3*d + 6*B^2*a^2*b^2*c^2*d^2 - B^2*a^4*d^4)*i)*log(e)^2 + 7
2*(B^2*b^4*d^4*i*n^2*x^4 + 4*B^2*a*b^3*d^4*i*n^2*x^3 + 6*B^2*a^2*b^2*d^4*i*
n^2*x^2 + 4*(B^2*b^4*c^3*d - 3*B^2*a*b^3*c^2*d^2 + 3*B^2*a^2*b^2*c*d^3)*i*n
^2*x + (3*B^2*b^4*c^4 - 8*B^2*a*b^3*c^3*d + 6*B^2*a^2*b^2*c^2*d^2)*i*n^2)*l
og((b*x + a)/(d*x + c))^2 + 72*(3*A^2*b^4*c^4 - 8*A^2*a*b^3*c^3*d + 6*A^2*a
^2*b^2*c^2*d^2 - A^2*a^4*d^4)*i - 4*((5*B^2*b^4*c^3*d - 12*B^2*a*b^3*c^2*d^
2 - 108*B^2*a^2*b^2*c*d^3 + 115*B^2*a^3*b*d^4)*i*n^2 - 12*(A*B*b^4*c^3*d -
```

6*A*B*a*b^3*c^2*d^2 + 18*A*B*a^2*b^2*c*d^3 - 13*A*B*a^3*b*d^4)*i*n - 72*(A^
2*b^4*c^3*d - 3*A^2*a*b^3*c^2*d^2 + 3*A^2*a^2*b^2*c*d^3 - A^2*a^3*b*d^4)*i)
x + 12(12*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*i*n*x^3 - 6*(B^2*b^4*c^2*d^2 -
8*B^2*a*b^3*c*d^3 + 7*B^2*a^2*b^2*d^4)*i*n*x^2 + (9*B^2*b^4*c^4 - 32*B^2*a*
b^3*c^3*d + 36*B^2*a^2*b^2*c^2*d^2 - 13*B^2*a^4*d^4)*i*n + 12*(3*A*B*b^4*c^
4 - 8*A*B*a*b^3*c^3*d + 6*A*B*a^2*b^2*c^2*d^2 - A*B*a^4*d^4)*i + 4*((B^2*b^
4*c^3*d - 6*B^2*a*b^3*c^2*d^2 + 18*B^2*a^2*b^2*c*d^3 - 13*B^2*a^3*b*d^4)*i*
n + 12*(A*B*b^4*c^3*d - 3*A*B*a*b^3*c^2*d^2 + 3*A*B*a^2*b^2*c*d^3 - A*B*a^3
*b*d^4)*i)*x + 12*(B^2*b^4*d^4*i*n*x^4 + 4*B^2*a*b^3*d^4*i*n*x^3 + 6*B^2*a^
2*b^2*d^4*i*n*x^2 + 4*(B^2*b^4*c^3*d - 3*B^2*a*b^3*c^2*d^2 + 3*B^2*a^2*b^2*
c*d^3)*i*n*x + (3*B^2*b^4*c^4 - 8*B^2*a*b^3*c^3*d + 6*B^2*a^2*b^2*c^2*d^2)*
i*n)*log((b*x + a)/(d*x + c)))*log(e) + 12*((13*B^2*b^4*d^4*i*n^2 + 12*A*B*
b^4*d^4*i*n)*x^4 + (9*B^2*b^4*c^4 - 32*B^2*a*b^3*c^3*d + 36*B^2*a^2*b^2*c^2
*d^2)*i*n^2 + 4*(12*A*B*a*b^3*d^4*i*n + (3*B^2*b^4*c*d^3 + 10*B^2*a*b^3*d^4
)*i*n^2)*x^3 + 12*(3*A*B*b^4*c^4 - 8*A*B*a*b^3*c^3*d + 6*A*B*a^2*b^2*c^2*d^
2)*i*n + 6*(12*A*B*a^2*b^2*d^4*i*n - (B^2*b^4*c^2*d^2 - 8*B^2*a*b^3*c*d^3 -
 6*B^2*a^2*b^2*d^4)*i*n^2)*x^2 + 4*((B^2*b^4*c^3*d - 6*B^2*a*b^3*c^2*d^2 +
18*B^2*a^2*b^2*c*d^3)*i*n^2 + 12*(A*B*b^4*c^3*d - 3*A*B*a*b^3*c^2*d^2 + 3*A
*B*a^2*b^2*c*d^3)*i*n)*x)*log((b*x + a)/(d*x + c)))/((b^9*c^3 - 3*a*b^8*c^2
*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*
d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2
*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^
2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d
 + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5)

giac [A] time = 38.00, size = 841, normalized size = 1.77

$$-\frac{1}{864}\left(\frac{72\left(3\,B^2b^2in^2-\frac{8\,(bx+a)B^2bdin^2}{dx+c}+\frac{6\,(bx+a)^2B^2d^2in^2}{(dx+c)^2}\right)\log\left(\frac{bx+a}{dx+c}\right)^2}{\frac{(bx+a)^4b^2c^2g^5}{(dx+c)^4}-\frac{2\,(bx+a)^4abcdg^5}{(dx+c)^4}+\frac{(bx+a)^4a^2d^2g^5}{(dx+c)^4}}+\frac{12\left(9\,B^2b^2in^2-\frac{32\,(bx+a)B^2bdin^2}{dx+c}+\frac{36\,(bx+a)^2}{(dx+c}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5,x, a
lgorithm="giac")

[Out] -1/864*(72*(3*B^2*b^2*i*n^2 - 8*(b*x + a)*B^2*b*d*i*n^2/(d*x + c) + 6*(b*x
+ a)^2*B^2*d^2*i*n^2/(d*x + c)^2)*log((b*x + a)/(d*x + c))^2/((b*x + a)^4*b
^2*c^2*g^5/(d*x + c)^4 - 2*(b*x + a)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x + a)^
4*a^2*d^2*g^5/(d*x + c)^4) + 12*(9*B^2*b^2*i*n^2 - 32*(b*x + a)*B^2*b*d*i*n
^2/(d*x + c) + 36*(b*x + a)^2*B^2*d^2*i*n^2/(d*x + c)^2 + 36*A*B*b^2*i*n +
36*B^2*b^2*i*n - 96*(b*x + a)*A*B*b*d*i*n/(d*x + c) - 96*(b*x + a)*B^2*b*d*
i*n/(d*x + c) + 72*(b*x + a)^2*A*B*d^2*i*n/(d*x + c)^2 + 72*(b*x + a)^2*B^2
*d^2*i*n/(d*x + c)^2)*log((b*x + a)/(d*x + c))/((b*x + a)^4*b^2*c^2*g^5/(d*
x + c)^4 - 2*(b*x + a)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x + a)^4*a^2*d^2*g^5/
(d*x + c)^4) + (27*B^2*b^2*i*n^2 - 128*(b*x + a)*B^2*b*d*i*n^2/(d*x + c) +
216*(b*x + a)^2*B^2*d^2*i*n^2/(d*x + c)^2 + 108*A*B*b^2*i*n + 108*B^2*b^2*i
n - 384(b*x + a)*A*B*b*d*i*n/(d*x + c) - 384*(b*x + a)*B^2*b*d*i*n/(d*x +
 c) + 432*(b*x + a)^2*A*B*d^2*i*n/(d*x + c)^2 + 432*(b*x + a)^2*B^2*d^2*i*n
/(d*x + c)^2 + 216*A^2*b^2*i + 432*A*B*b^2*i + 216*B^2*b^2*i - 576*(b*x + a
)*A^2*b*d*i/(d*x + c) - 1152*(b*x + a)*A*B*b*d*i/(d*x + c) - 576*(b*x + a)*
B^2*b*d*i/(d*x + c) + 432*(b*x + a)^2*A^2*d^2*i/(d*x + c)^2 + 864*(b*x + a)
^2*A*B*d^2*i/(d*x + c)^2 + 432*(b*x + a)^2*B^2*d^2*i/(d*x + c)^2)/((b*x + a
)^4*b^2*c^2*g^5/(d*x + c)^4 - 2*(b*x + a)^4*a*b*c*d*g^5/(d*x + c)^4 + (b*x
+ a)^4*a^2*d^2*g^5/(d*x + c)^4))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)^{5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^5,x)
```

```
[Out] int((d*i*x+c*i)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^5,x)
```

maxima [B] time = 4.87, size = 4838, normalized size = 10.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5,x, a
lgorithm="maxima")
```

```
[Out] 1/24*A*B*c*i*n*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b*c*d
^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*b^2*
c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*
b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b
^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*
b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6
*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*
d^3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d
^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4 - 4*
a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5)) - 1/72
*A*B*d*i*n*((7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 +
 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2
*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b
*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4
 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3
+ 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2
 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x
+ (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12
*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2
*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x
 + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4
*b^2*d^4)*g^5)) - 1/12*(4*b*x + a)*B^2*d*i*log(e*(b*x/(d*x + c) + a/(d*x +
c))^n)^2/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5
*x + a^4*b^2*g^5) + 1/288*(12*n*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2
*d - 23*a^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3
*c^2*d - 5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2
*b^6*c*d^2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*
b^5*c*d^2 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4
*b^4*c*d^2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^
5*b^3*c*d^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b
^2*c*d^2 - a^7*b*d^3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d
+ 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x +
c)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*
d^4)*g^5))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - (9*b^4*c^4 - 64*a*b^3*c
^3*d + 216*a^2*b^2*c^2*d^2 - 576*a^3*b*c*d^3 + 415*a^4*d^4 - 300*(b^4*c*d^3
 - a*b^3*d^4)*x^3 + 6*(13*b^4*c^2*d^2 - 176*a*b^3*c*d^3 + 163*a^2*b^2*d^4)*
x^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x
 + a^4*d^4)*log(b*x + a)^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*
d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(d*x + c)^2 - 4*(7*b^4*c^3*d - 60*a*b
```

```
^3*c^2*d^2 + 324*a^2*b^2*c*d^3 - 271*a^3*b*d^4)*x - 300*(b^4*d^4*x^4 + 4*a*
b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a) + 1
2*(25*b^4*d^4*x^4 + 100*a*b^3*d^4*x^3 + 150*a^2*b^2*d^4*x^2 + 100*a^3*b*d^4
*x + 25*a^4*d^4 - 12*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4
*a^3*b*d^4*x + a^4*d^4)*log(b*x + a))*log(d*x + c))*n^2/(a^4*b^5*c^4*g^5 -
4*a^5*b^4*c^3*d*g^5 + 6*a^6*b^3*c^2*d^2*g^5 - 4*a^7*b^2*c*d^3*g^5 + a^8*b*d
^4*g^5 + (b^9*c^4*g^5 - 4*a*b^8*c^3*d*g^5 + 6*a^2*b^7*c^2*d^2*g^5 - 4*a^3*b
^6*c*d^3*g^5 + a^4*b^5*d^4*g^5)*x^4 + 4*(a*b^8*c^4*g^5 - 4*a^2*b^7*c^3*d*g^
5 + 6*a^3*b^6*c^2*d^2*g^5 - 4*a^4*b^5*c*d^3*g^5 + a^5*b^4*d^4*g^5)*x^3 + 6*
(a^2*b^7*c^4*g^5 - 4*a^3*b^6*c^3*d*g^5 + 6*a^4*b^5*c^2*d^2*g^5 - 4*a^5*b^4*
c*d^3*g^5 + a^6*b^3*d^4*g^5)*x^2 + 4*(a^3*b^6*c^4*g^5 - 4*a^4*b^5*c^3*d*g^5
 + 6*a^5*b^4*c^2*d^2*g^5 - 4*a^6*b^3*c*d^3*g^5 + a^7*b^2*d^4*g^5)*x))*B^2*c
*i - 1/864*(12*n*((7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4
*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 +
 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13
*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g
^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^
5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g
^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*
g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5
) + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b
^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*l
og(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3
 + a^4*b^2*d^4)*g^5))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (37*a*b^4*c^
4 - 304*a^2*b^3*c^3*d + 1512*a^3*b^2*c^2*d^2 - 1360*a^4*b*c*d^3 + 115*a^5*d
^4 + 12*(88*b^5*c^2*d^2 - 101*a*b^4*c*d^3 + 13*a^2*b^3*d^4)*x^3 - 6*(40*b^5
*c^3*d - 609*a*b^4*c^2*d^2 + 648*a^2*b^3*c*d^3 - 79*a^3*b^2*d^4)*x^2 - 72*(
4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3
- a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c
*d^3 - a^4*b*d^4)*x)*log(b*x + a)^2 - 72*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*
c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3
*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*log(d*x + c)
^2 + 4*(16*b^5*c^4 - 163*a*b^4*c^3*d + 1068*a^2*b^3*c^2*d^2 - 1036*a^3*b^2*
c*d^3 + 115*a^4*b*d^4)*x + 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3
- 13*a*b^4*d^4)*x^4 + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b
^3*c*d^3 - 13*a^3*b^2*d^4)*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x)*log
(b*x + a) - 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4)
*x^4 + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a
^3*b^2*d^4)*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x - 12*(4*a^4*b*c*d^3
 - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4
)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*
d^4)*x)*log(b*x + a))*log(d*x + c))*n^2/(a^4*b^6*c^4*g^5 - 4*a^5*b^5*c^3*d*
g^5 + 6*a^6*b^4*c^2*d^2*g^5 - 4*a^7*b^3*c*d^3*g^5 + a^8*b^2*d^4*g^5 + (b^10
*c^4*g^5 - 4*a*b^9*c^3*d*g^5 + 6*a^2*b^8*c^2*d^2*g^5 - 4*a^3*b^7*c*d^3*g^5
+ a^4*b^6*d^4*g^5)*x^4 + 4*(a*b^9*c^4*g^5 - 4*a^2*b^8*c^3*d*g^5 + 6*a^3*b^7
*c^2*d^2*g^5 - 4*a^4*b^6*c*d^3*g^5 + a^5*b^5*d^4*g^5)*x^3 + 6*(a^2*b^8*c^4*
g^5 - 4*a^3*b^7*c^3*d*g^5 + 6*a^4*b^6*c^2*d^2*g^5 - 4*a^5*b^5*c*d^3*g^5 + a
^6*b^4*d^4*g^5)*x^2 + 4*(a^3*b^7*c^4*g^5 - 4*a^4*b^6*c^3*d*g^5 + 6*a^5*b^5*
c^2*d^2*g^5 - 4*a^6*b^4*c*d^3*g^5 + a^7*b^3*d^4*g^5)*x))*B^2*d*i - 1/6*(4*b
*x + a)*A*B*d*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^6*g^5*x^4 + 4*a*b
^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/4*B^2*c
*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3
+ 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) - 1/12*(4*b*x + a)*A^2*d
*i/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a
^4*b^2*g^5) - 1/2*A*B*c*i*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^5*x
^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) - 1
/4*A^2*c*i/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g
^5*x + a^4*b*g^5)
```

mupad [B] time = 9.74, size = 1794, normalized size = 3.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x)^
5,x)
```

```
[Out] ((72*A^2*a^3*d^3*i + 216*A^2*b^3*c^3*i + 115*B^2*a^3*d^3*i*n^2 + 27*B^2*b^3
*c^3*i*n^2 + 156*A*B*a^3*d^3*i*n + 108*A*B*b^3*c^3*i*n - 360*A^2*a*b^2*c^2*
d*i + 72*A^2*a^2*b*c*d^2*i - 101*B^2*a*b^2*c^2*d*i*n^2 + 115*B^2*a^2*b*c*d^
2*i*n^2 - 276*A*B*a*b^2*c^2*d*i*n + 156*A*B*a^2*b*c*d^2*i*n)/(12*(a*d - b*c
)) + (x^2*(79*B^2*a*b^2*d^3*i*n^2 - B^2*b^3*c*d^2*i*n^2 + 84*A*B*a*b^2*d^3*
i*n - 12*A*B*b^3*c*d^2*i*n))/(2*(a*d - b*c)) + (x*(72*A^2*a^2*b*d^3*i + 72*
A^2*b^3*c^2*d*i + 115*B^2*a^2*b*d^3*i*n^2 - 5*B^2*b^3*c^2*d*i*n^2 - 144*A^2
*a*b^2*c*d^2*i + 7*B^2*a*b^2*c*d^2*i*n^2 + 156*A*B*a^2*b*d^3*i*n + 12*A*B*b
^3*c^2*d*i*n - 60*A*B*a*b^2*c*d^2*i*n))/(3*(a*d - b*c)) + (d*x^3*(13*B^2*b^
3*d^2*i*n^2 + 12*A*B*b^3*d^2*i*n))/(a*d - b*c))/(x*(288*a^3*b^4*c*g^5 - 288
*a^4*b^3*d*g^5) - x^3*(288*a^2*b^5*d*g^5 - 288*a*b^6*c*g^5) + x^4*(72*b^7*c
*g^5 - 72*a*b^6*d*g^5) + x^2*(432*a^2*b^5*c*g^5 - 432*a^3*b^4*d*g^5) + 72*a
^4*b^3*c*g^5 - 72*a^5*b^2*d*g^5) - log(e*((a + b*x)/(c + d*x))^n)^2*(((B^2*
c*i)/(4*b) + (B^2*d*i*x)/(3*b) + (B^2*a*d*i)/(12*b^2))/(a^4*g^5 + b^4*g^5*x
^4 + 4*a*b^3*g^5*x^3 + 6*a^2*b^2*g^5*x^2 + 4*a^3*b*g^5*x) - (B^2*d^4*i)/(12
*b^2*g^5*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) - log(e*((a
+ b*x)/(c + d*x))^n)*((A*B*a*d*i + 3*A*B*b*c*i - B^2*a*d*i*n + B^2*b*c*i*n
+ 4*A*B*b*d*i*x)/(6*a^4*b^2*g^5 + 6*b^6*g^5*x^4 + 24*a^3*b^3*g^5*x + 24*a*b
^5*g^5*x^3 + 36*a^2*b^4*g^5*x^2) + (B^2*d^4*i*(x^2*(b*(b*((3*a*b^2*g^5*n*(a
*d - b*c))/(2*d) + (b^2*g^5*n*(a*d - b*c)*(4*a*d - b*c))/(2*d^2)) + (3*a*b^
3*g^5*n*(a*d - b*c))/d + (b^3*g^5*n*(a*d - b*c)*(4*a*d - b*c))/d^2) + (9*a*
b^4*g^5*n*(a*d - b*c))/(2*d) + (3*b^4*g^5*n*(a*d - b*c)*(4*a*d - b*c))/(2*d
^2)) + a*(a*((3*a*b^2*g^5*n*(a*d - b*c))/(2*d) + (b^2*g^5*n*(a*d - b*c)*(4*
a*d - b*c))/(2*d^2)) + (b^2*g^5*n*(a*d - b*c)*(6*a^2*d^2 + b^2*c^2 - 4*a*b*
c*d))/(2*d^3)) + x*(a*(b*((3*a*b^2*g^5*n*(a*d - b*c))/(2*d) + (b^2*g^5*n*(a
*d - b*c)*(4*a*d - b*c))/(2*d^2)) + (3*a*b^3*g^5*n*(a*d - b*c))/d + (b^3*g^
5*n*(a*d - b*c)*(4*a*d - b*c))/d^2) + b*(a*((3*a*b^2*g^5*n*(a*d - b*c))/(2*
d) + (b^2*g^5*n*(a*d - b*c)*(4*a*d - b*c))/(2*d^2)) + (b^2*g^5*n*(a*d - b*c
)*(6*a^2*d^2 + b^2*c^2 - 4*a*b*c*d))/(2*d^3)) + (3*b^3*g^5*n*(a*d - b*c)*(6
*a^2*d^2 + b^2*c^2 - 4*a*b*c*d))/(2*d^3)) + (3*b^2*g^5*n*(a*d - b*c)*(4*a^3
*d^3 - b^3*c^3 + 4*a*b^2*c^2*d - 6*a^2*b*c*d^2))/(2*d^4) + (6*b^5*g^5*n*x^3
*(a*d - b*c))/d))/(6*b^2*g^5*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c
*d^2)*(6*a^4*b^2*g^5 + 6*b^6*g^5*x^4 + 24*a^3*b^3*g^5*x + 24*a*b^5*g^5*x^3
+ 36*a^2*b^4*g^5*x^2))) - (B*d^4*i*n*atan((B*d^4*i*n*(12*A + 13*B*n)*((b^5*
c^3*g^5 + a^3*b^2*d^3*g^5 - a*b^4*c^2*d*g^5 - a^2*b^3*c*d^2*g^5)/(b^4*c^2*g
^5 + a^2*b^2*d^2*g^5 - 2*a*b^3*c*d*g^5) + 2*b*d*x)*(b^4*c^2*g^5 + a^2*b^2*d
^2*g^5 - 2*a*b^3*c*d*g^5)*1i)/(b^2*g^5*(a*d - b*c)^3*(13*B^2*d^4*i*n^2 + 12
*A*B*d^4*i*n)))*(12*A + 13*B*n)*1i)/(36*b^2*g^5*(a*d - b*c)^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**5,x)
```

```
[Out] Timed out
```

3.168 $\int (ag+bgx)^3(ci+dix)^2 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=766

$$-\frac{Bg^3i^2n(bc-ad)^6\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(6B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+6A+11Bn\right)}{180b^3d^4}-\frac{Bg^3i^2n(a+bx)(bc-ad)^5\left(6B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{180b^3d^3}$$

```
[Out] 3/20*B^2*(-a*d+b*c)^5*g^3*i^2*n^2*x/b^2/d^3+1/60*B^2*(-a*d+b*c)^2*g^3*i^2*n
^2*(b*x+a)^4/b^3-3/40*B^2*(-a*d+b*c)^4*g^3*i^2*n^2*(d*x+c)^2/b/d^4+1/60*B^2
*(-a*d+b*c)^3*g^3*i^2*n^2*(d*x+c)^3/d^4-1/90*B*(-a*d+b*c)^3*g^3*i^2*n*(b*x+
a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^3/d-1/20*B*(-a*d+b*c)^2*g^3*i^2*n*(b
*x+a)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^3-1/15*B*(-a*d+b*c)*g^3*i^2*n*(b*
x+a)^4*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2+1/60*(-a*d+b*c)^2*g^3*i^
2*(b*x+a)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^3+1/15*(-a*d+b*c)*g^3*i^2*(
b*x+a)^4*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/6*g^3*i^2*(b*x+a)^
4*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/180*B*(-a*d+b*c)^4*g^3*i^
2*n*(b*x+a)^2*(3*A+B*n+3*B*ln(e*((b*x+a)/(d*x+c))^n))/b^3/d^2-1/180*B*(-a*d
+b*c)^5*g^3*i^2*n*(b*x+a)*(6*A+5*B*n+6*B*ln(e*((b*x+a)/(d*x+c))^n))/b^3/d^3
-1/180*B*(-a*d+b*c)^6*g^3*i^2*n*(6*A+11*B*n+6*B*ln(e*((b*x+a)/(d*x+c))^n))*
ln((-a*d+b*c)/b/(d*x+c))/b^3/d^4-1/20*B^2*(-a*d+b*c)^6*g^3*i^2*n^2*ln(d*x+c
)/b^3/d^4-1/30*B^2*(-a*d+b*c)^6*g^3*i^2*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/
b^3/d^4
```

Rubi [A] time = 3.35, antiderivative size = 848, normalized size of antiderivative = 1.11, number of steps used = 83, number of rules used = 13, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.289, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^3i^2n^2\log^2(c+dx)(bc-ad)^6}{60b^3d^4}+\frac{B^2g^3i^2n^2\log(c+dx)(bc-ad)^6}{90b^3d^4}-\frac{B^2g^3i^2n^2\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(c+dx)(bc-ad}{30b^3d^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^
2,x]
```

```
[Out] -(A*B*(b*c - a*d)^5*g^3*i^2*n*x)/(30*b^2*d^3) + (B^2*(b*c - a*d)^5*g^3*i^2*
n^2*x)/(45*b^2*d^3) - (7*B^2*(b*c - a*d)^4*g^3*i^2*n^2*(a + b*x)^2)/(360*b^
3*d^2) + (B^2*(b*c - a*d)^3*g^3*i^2*n^2*(a + b*x)^3)/(60*b^3*d) + (B^2*(b*c
 - a*d)^2*g^3*i^2*n^2*(a + b*x)^4)/(60*b^3) - (B^2*(b*c - a*d)^5*g^3*i^2*n*
(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(30*b^3*d^3) + (B*(b*c - a*d)^4*g
^3*i^2*n*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(60*b^3*d^2) -
 (B*(b*c - a*d)^3*g^3*i^2*n*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]))/(90*b^3*d) - (7*B*(b*c - a*d)^2*g^3*i^2*n*(a + b*x)^4*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n]))/(60*b^3) - (B*d*(b*c - a*d)*g^3*i^2*n*(a + b*x)^5*(
A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(15*b^3) + ((b*c - a*d)^2*g^3*i^2*(a
 + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(4*b^3) + (2*d*(b*c - a
*d)*g^3*i^2*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(5*b^3) +
 (d^2*g^3*i^2*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(6*b^3)
 + (B^2*(b*c - a*d)^6*g^3*i^2*n^2*Log[c + d*x])/(90*b^3*d^4) - (B^2*(b*c -
a*d)^6*g^3*i^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(30*b^3*
d^4) + (B*(b*c - a*d)^6*g^3*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Lo
g[c + d*x])/(30*b^3*d^4) + (B^2*(b*c - a*d)^6*g^3*i^2*n^2*Log[c + d*x]^2)/(
60*b^3*d^4) - (B^2*(b*c - a*d)^6*g^3*i^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c
- a*d)])/(30*b^3*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
```

```
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (168c+168dx)^2(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx = \int \left(\frac{28224(bc-ad)^2(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{b^2}\right.$$

$$= \frac{\left(28224(bc-ad)^2\right)\int (ag+bgx)^3\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{b^2}$$

$$= \frac{7056(bc-ad)^2g^3(a+bx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{b^3}$$

$$= \frac{7056(bc-ad)^2g^3(a+bx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{b^3}$$

$$= \frac{7056(bc-ad)^2g^3(a+bx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{b^3}$$

$$= \frac{7056(bc-ad)^2g^3(a+bx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{b^3}$$

$$= -\frac{4704AB(bc-ad)^5g^3nx}{5b^2d^3} + \frac{2352B(bc-ad)^4g^3n}{}$$

$$= -\frac{4704AB(bc-ad)^5g^3nx}{5b^2d^3} - \frac{4704B^2(bc-ad)^5g^3}{5}$$

$$= -\frac{4704AB(bc-ad)^5g^3nx}{5b^2d^3} - \frac{4704B^2(bc-ad)^5g^3}{5}$$

$$= -\frac{4704AB(bc-ad)^5g^3nx}{5b^2d^3} + \frac{3136B^2(bc-ad)^5g^3}{5b^2d^3}$$

$$= -\frac{4704AB(bc-ad)^5g^3nx}{5b^2d^3} + \frac{3136B^2(bc-ad)^5g^3}{5b^2d^3}$$

$$= -\frac{4704AB(bc-ad)^5g^3nx}{5b^2d^3} + \frac{3136B^2(bc-ad)^5g^3}{5b^2d^3}$$

Mathematica [B] time = 1.54, size = 1634, normalized size = 2.13

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n])^2,x]
```

```
[Out] (g^3*i^2*(15*(b*c - a*d)^2*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n
])^2 + 24*d*(b*c - a*d)*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^
```

```
2 + 10*d^2*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - (5*B*(b*c
 - a*d)^3*n*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*
((a + b*x)/(c + d*x))^n] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[e*((
a + b*x)/(c + d*x))^n]) + 2*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[e*(
(a + b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*
x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*n*(
b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 3*B*(b*c - a*d)^3*n*((2*Log[(d*(a +
b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d
*x))/(b*c - a*d)])))/d^4 + (2*B*(b*c - a*d)^2*n*(24*A*b*d*(b*c - a*d)^3*x +
 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 12*d^2*(b*
c - a*d)^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 8*d^3*(b*c
- a*d)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*d^4*(a + b*x)
^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 24*B*(b*c - a*d)^4*n*Log[c + d*
x] - 24*(b*c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] +
 4*B*(b*c - a*d)^2*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)
^2*Log[c + d*x]) + B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) +
 a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 12*
B*(b*c - a*d)^3*n*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 12*B*(b*c - a*d)^
4*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*
PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^4 - (B*(b*c - a*d)*n*(120*A*b*d*
(b*c - a*d)^4*x + 120*B*d*(b*c - a*d)^4*(a + b*x)*Log[e*((a + b*x)/(c + d*x
))^n] + 60*d^2*(-(b*c) + a*d)^3*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]) + 40*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x
))^n]) + 30*d^4*(-(b*c) + a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x
))^n]) + 24*d^5*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 120*B*
(b*c - a*d)^5*n*Log[c + d*x] - 120*(b*c - a*d)^5*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])*Log[c + d*x] + 20*B*(b*c - a*d)^3*n*(2*b*d*(b*c - a*d)*x - d^2
*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 5*B*(b*c - a*d)^2*n*(6*b*d*(
b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(
b*c - a*d)^3*Log[c + d*x]) + 2*B*(b*c - a*d)*n*(12*b*d*(b*c - a*d)^3*x - 6*
d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3 - 3*d^4*(a +
b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]) + 60*B*(b*c - a*d)^4*n*(b*d*x + (-(
b*c) + a*d)*Log[c + d*x]) + 60*B*(b*c - a*d)^5*n*((2*Log[(d*(a + b*x))/(-(b
*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c
- a*d)])))/(6*d^4)))/(60*b^3)
```

fricas [F] time = 1.00, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2b^3d^2g^3i^2x^5 + A^2a^3c^2g^3i^2 + \left(2\,A^2b^3cd + 3\,A^2ab^2d^2\right)g^3i^2x^4 + \left(A^2b^3c^2 + 6\,A^2ab^2cd + 3\,A^2a^2bd^2\right)g^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="fricas")
```

```
[Out] integral(A^2*b^3*d^2*g^3*i^2*x^5 + A^2*a^3*c^2*g^3*i^2 + (2*A^2*b^3*c*d + 3
*A^2*a*b^2*d^2)*g^3*i^2*x^4 + (A^2*b^3*c^2 + 6*A^2*a*b^2*c*d + 3*A^2*a^2*b*
d^2)*g^3*i^2*x^3 + (3*A^2*a*b^2*c^2 + 6*A^2*a^2*b*c*d + A^2*a^3*d^2)*g^3*i^
2*x^2 + (3*A^2*a^2*b*c^2 + 2*A^2*a^3*c*d)*g^3*i^2*x + (B^2*b^3*d^2*g^3*i^2*
x^5 + B^2*a^3*c^2*g^3*i^2 + (2*B^2*b^3*c*d + 3*B^2*a*b^2*d^2)*g^3*i^2*x^4 +
 (B^2*b^3*c^2 + 6*B^2*a*b^2*c*d + 3*B^2*a^2*b*d^2)*g^3*i^2*x^3 + (3*B^2*a*b
^2*c^2 + 6*B^2*a^2*b*c*d + B^2*a^3*d^2)*g^3*i^2*x^2 + (3*B^2*a^2*b*c^2 + 2*
B^2*a^3*c*d)*g^3*i^2*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^3*d^2*g
^3*i^2*x^5 + A*B*a^3*c^2*g^3*i^2 + (2*A*B*b^3*c*d + 3*A*B*a*b^2*d^2)*g^3*i^
2*x^4 + (A*B*b^3*c^2 + 6*A*B*a*b^2*c*d + 3*A*B*a^2*b*d^2)*g^3*i^2*x^3 + (3*
A*B*a*b^2*c^2 + 6*A*B*a^2*b*c*d + A*B*a^3*d^2)*g^3*i^2*x^2 + (3*A*B*a^2*b*c
^2 + 2*A*B*a^3*c*d)*g^3*i^2*x)*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{3} (dix+ci)^{2} \left(B\ln \left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 8.10, size = 5952, normalized size = 7.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="maxima")
```

```
[Out] 1/3*A*B*b^3*d^2*g^3*i^2*x^6*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/6*A^
2*b^3*d^2*g^3*i^2*x^6 + 4/5*A*B*b^3*c*d*g^3*i^2*x^5*log(e*(b*x/(d*x + c) +
a/(d*x + c))^n) + 6/5*A*B*a*b^2*d^2*g^3*i^2*x^5*log(e*(b*x/(d*x + c) + a/(d
*x + c))^n) + 2/5*A^2*b^3*c*d*g^3*i^2*x^5 + 3/5*A^2*a*b^2*d^2*g^3*i^2*x^5 +
 1/2*A*B*b^3*c^2*g^3*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3*A*B
*a*b^2*c*d*g^3*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*A*B*a^2
*b*d^2*g^3*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A^2*b^3*c^2
*g^3*i^2*x^4 + 3/2*A^2*a*b^2*c*d*g^3*i^2*x^4 + 3/4*A^2*a^2*b*d^2*g^3*i^2*x^
4 + 2*A*B*a*b^2*c^2*g^3*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 4*
A*B*a^2*b*c*d*g^3*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2/3*A*B*
a^3*d^2*g^3*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a*b^2*c^2*
g^3*i^2*x^3 + 2*A^2*a^2*b*c*d*g^3*i^2*x^3 + 1/3*A^2*a^3*d^2*g^3*i^2*x^3 + 3
*A*B*a^2*b*c^2*g^3*i^2*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*A*B*a
^3*c*d*g^3*i^2*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/2*A^2*a^2*b*c
^2*g^3*i^2*x^2 + A^2*a^3*c*d*g^3*i^2*x^2 - 1/180*A*B*b^3*d^2*g^3*i^2*n*(60*
a^6*log(b*x + a)/b^6 - 60*c^6*log(d*x + c)/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5
)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)
*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5)
) + 1/15*A*B*b^3*c*d*g^3*i^2*n*(12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x +
c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3
 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) + 1
/10*A*B*a*b^2*d^2*g^3*i^2*n*(12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/
d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 +
6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) - 1/12
*A*B*b^3*c^2*g^3*i^2*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (
2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3
- a^3*d^3)*x)/(b^3*d^3)) - 1/2*A*B*a*b^2*c*d*g^3*i^2*n*(6*a^4*log(b*x + a)/
b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*
d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/4*A*B*a^2*b*d^
2*g^3*i^2*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^
```

2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + A*B*a*b^2*c^2*g^3*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 2*A*B*a^2*b*c*d*g^3*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 1/3*A*B*a^3*d^2*g^3*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 3*A*B*a^2*b*c^2*g^3*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 2*A*B*a^3*c*d*g^3*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + 2*A*B*a^3*c^2*g^3*i^2*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + 2*A*B*a^3*c^2*g^3*i^2*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a^3*c^2*g^3*i^2*x - 1/180*(33*a^4*b*c^2*d^4*g^3*i^2*n^2 - 6*a^5*c*d^5*g^3*i^2*n^2 - 2*(g^3*i^2*n^2 + 3*g^3*i^2*n*log(e))*b^5*c^6 + 6*(g^3*i^2*n^2 + 6*g^3*i^2*n*log(e))*a*b^4*c^5*d + 3*(g^3*i^2*n^2 - 30*g^3*i^2*n*log(e))*a^2*b^3*c^4*d^2 - 2*(17*g^3*i^2*n^2 - 60*g^3*i^2*n*log(e))*a^3*b^2*c^3*d^3)*B^2*log(d*x + c)/(b^2*d^4) + 1/30*(b^6*c^6*g^3*i^2*n^2 - 6*a*b^5*c^5*d*g^3*i^2*n^2 + 15*a^2*b^4*c^4*d^2*g^3*i^2*n^2 - 20*a^3*b^3*c^3*d^3*g^3*i^2*n^2 + 15*a^4*b^2*c^2*d^4*g^3*i^2*n^2 - 6*a^5*b*c*d^5*g^3*i^2*n^2 + a^6*d^6*g^3*i^2*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^3*d^4) + 1/360*(60*B^2*b^6*d^6*g^3*i^2*x^6*log(e)^2 - 24*((g^3*i^2*n*log(e) - 6*g^3*i^2*log(e)^2)*b^6*c*d^5 - (g^3*i^2*n*log(e) + 9*g^3*i^2*log(e)^2)*a*b^5*d^6)*B^2*x^5 + 6*((g^3*i^2*n^2 - 7*g^3*i^2*n*log(e) + 15*g^3*i^2*log(e)^2)*b^6*c^2*d^4 - 2*(g^3*i^2*n^2 + 3*g^3*i^2*n*log(e) - 45*g^3*i^2*log(e)^2)*a*b^5*c*d^5 + (g^3*i^2*n^2 + 13*g^3*i^2*n*log(e) + 45*g^3*i^2*log(e)^2)*a^2*b^4*d^6)*B^2*x^4 + 2*((3*g^3*i^2*n^2 - 2*g^3*i^2*n*log(e))*b^6*c^3*d^3 + 3*(g^3*i^2*n^2 - 26*g^3*i^2*n*log(e) + 60*g^3*i^2*log(e)^2)*a*b^5*c^2*d^4 - 3*(5*g^3*i^2*n^2 - 14*g^3*i^2*n*log(e) - 120*g^3*i^2*log(e)^2)*a^2*b^4*c*d^5 + (9*g^3*i^2*n^2 + 38*g^3*i^2*n*log(e) + 60*g^3*i^2*log(e)^2)*a^3*b^3*d^6)*B^2*x^3 - ((7*g^3*i^2*n^2 - 6*g^3*i^2*n*log(e))*b^6*c^4*d^2 - 2*(23*g^3*i^2*n^2 - 18*g^3*i^2*n*log(e))*a*b^5*c^3*d^3 + 60*(g^3*i^2*n^2 + 3*g^3*i^2*n*log(e) - 9*g^3*i^2*log(e)^2)*a^2*b^4*c^2*d^4 - 2*(5*g^3*i^2*n^2 + 102*g^3*i^2*n*log(e) + 180*g^3*i^2*log(e)^2)*a^3*b^3*c*d^5 - (11*g^3*i^2*n^2 + 6*g^3*i^2*n*log(e))*a^4*b^2*d^6)*B^2*x^2 - 6*(15*a^4*b^2*c^2*d^4*g^3*i^2*n^2 - 6*a^5*b*c*d^5*g^3*i^2*n^2 + a^6*d^6*g^3*i^2*n^2)*B^2*log(b*x + a)^2 - 12*(b^6*c^6*g^3*i^2*n^2 - 6*a*b^5*c^5*d*g^3*i^2*n^2 + 15*a^2*b^4*c^4*d^2*g^3*i^2*n^2 - 20*a^3*b^3*c^3*d^3*g^3*i^2*n^2)*B^2*log(b*x + a)*log(d*x + c) + 6*(b^6*c^6*g^3*i^2*n^2 - 6*a*b^5*c^5*d*g^3*i^2*n^2 + 15*a^2*b^4*c^4*d^2*g^3*i^2*n^2 - 20*a^3*b^3*c^3*d^3*g^3*i^2*n^2)*B^2*log(d*x + c)^2 + 2*(2*(2*g^3*i^2*n^2 - 3*g^3*i^2*n*log(e))*b^6*c^5*d - 9*(3*g^3*i^2*n^2 - 4*g^3*i^2*n*log(e))*a*b^5*c^4*d^2 + (77*g^3*i^2*n^2 - 90*g^3*i^2*n*log(e))*a^2*b^4*c^3*d^3 - (97*g^3*i^2*n^2 - 30*g^3*i^2*n*log(e) - 180*g^3*i^2*log(e)^2)*a^3*b^3*c^2*d^4 + 3*(17*g^3*i^2*n^2 + 12*g^3*i^2*n*log(e))*a^4*b^2*c*d^5 - 2*(4*g^3*i^2*n^2 + 3*g^3*i^2*n*log(e))*a^5*b*d^6)*B^2*x - 2*(6*a*b^5*c^5*d*g^3*i^2*n^2 - 33*a^2*b^4*c^4*d^2*g^3*i^2*n^2 + 74*a^3*b^3*c^3*d^3*g^3*i^2*n^2 - 9*(7*g^3*i^2*n^2 + 10*g^3*i^2*n*log(e))*a^4*b^2*c^2*d^4 + 18*(g^3*i^2*n^2 + 2*g^3*i^2*n*log(e))*a^5*b*c*d^5 - 2*(g^3*i^2*n^2 + 3*g^3*i^2*n*log(e))*a^6*d^6)*B^2*log(b*x + a) + 6*(10*B^2*b^6*d^6*g^3*i^2*x^6 + 60*B^2*a^3*b^3*c^2*d^4*g^3*i^2*x + 12*(2*b^6*c*d^5*g^3*i^2 + 3*a*b^5*d^6*g^3*i^2)*B^2*x^5 + 15*(b^6*c^2*d^4*g^3*i^2 + 6*a*b^5*c*d^5*g^3*i^2 + 3*a^2*b^4*d^6*g^3*i^2)*B^2*x^4 + 20*(3*a*b^5*c^2*d^4*g^3*i^2 + 6*a^2*b^4*c*d^5*g^3*i^2 + a^3*b^3*d^6*g^3*i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3*i^2 + 2*a^3*b^3*c*d^5*g^3*i^2)*B^2*x^2)*log((b*x + a)^n)^2 + 6*(10*B^2*b^6*d^6*g^3*i^2*x^6 + 60*B^2*a^3*b^3*c^2*d^4*g^3*i^2*x + 12*(2*b^6*c*d^5*g^3*i^2 + 3*a*b^5*d^6*g^3*i^2)*B^2*x^5 + 15*(b^6*c^2*d^4*g^3*i^2 + 6*a*b^5*c*d^5*g^3*i^2 + 3*a^2*b^4*d^6*g^3*i^2)*B^2*x^4 + 20*(3*a*b^5*c^2*d^4*g^3*i^2 + 6*a^2*b^4*c*d^5*g^3*i^2 + a^3*b^3*d^6*g^3*i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3*i^2 + 2*a^3*b^3*c*d^5*g^3*i^2)*B^2*x^2)*log((d*x + c)^n)^2 + 2*(60*B^2*b^6*d^6*g^3*i^2*x^6*log(e) - 12*((g^3*i^2*n - 12*g^3*i^2*log(e))*b^6*c*d^5 - (g^3*i^2*n + 18*g^3*i^2*log(e))*a*b^5*d^6)*B^2*x^5 - 3*((7*g^3*i^2*n

```
- 30*g^3*i^2*log(e))*b^6*c^2*d^4 + 6*(g^3*i^2*n - 30*g^3*i^2*log(e))*a*b^5*
c*d^5 - (13*g^3*i^2*n + 90*g^3*i^2*log(e))*a^2*b^4*d^6)*B^2*x^4 - 2*(b^6*c^
3*d^3*g^3*i^2*n + 3*(13*g^3*i^2*n - 60*g^3*i^2*log(e))*a*b^5*c^2*d^4 - 3*(7
*g^3*i^2*n + 120*g^3*i^2*log(e))*a^2*b^4*c*d^5 - (19*g^3*i^2*n + 60*g^3*i^2
*log(e))*a^3*b^3*d^6)*B^2*x^3 + 3*(b^6*c^4*d^2*g^3*i^2*n - 6*a*b^5*c^3*d^3*
g^3*i^2*n + a^4*b^2*d^6*g^3*i^2*n - 30*(g^3*i^2*n - 6*g^3*i^2*log(e))*a^2*b
^4*c^2*d^4 + 2*(17*g^3*i^2*n + 60*g^3*i^2*log(e))*a^3*b^3*c*d^5)*B^2*x^2 -
6*(b^6*c^5*d*g^3*i^2*n - 6*a*b^5*c^4*d^2*g^3*i^2*n + 15*a^2*b^4*c^3*d^3*g^3
*i^2*n - 6*a^4*b^2*c*d^5*g^3*i^2*n + a^5*b*d^6*g^3*i^2*n - 5*(g^3*i^2*n + 1
2*g^3*i^2*log(e))*a^3*b^3*c^2*d^4)*B^2*x + 6*(15*a^4*b^2*c^2*d^4*g^3*i^2*n
- 6*a^5*b*c*d^5*g^3*i^2*n + a^6*d^6*g^3*i^2*n)*B^2*log(b*x + a) + 6*(b^6*c^
6*g^3*i^2*n - 6*a*b^5*c^5*d*g^3*i^2*n + 15*a^2*b^4*c^4*d^2*g^3*i^2*n - 20*a
^3*b^3*c^3*d^3*g^3*i^2*n)*B^2*log(d*x + c))*log((b*x + a)^n) - 2*(60*B^2*b^
6*d^6*g^3*i^2*x^6*log(e) - 12*((g^3*i^2*n - 12*g^3*i^2*log(e))*b^6*c*d^5 -
(g^3*i^2*n + 18*g^3*i^2*log(e))*a*b^5*d^6)*B^2*x^5 - 3*((7*g^3*i^2*n - 30*g
^3*i^2*log(e))*b^6*c^2*d^4 + 6*(g^3*i^2*n - 30*g^3*i^2*log(e))*a*b^5*c*d^5
- (13*g^3*i^2*n + 90*g^3*i^2*log(e))*a^2*b^4*d^6)*B^2*x^4 - 2*(b^6*c^3*d^3*
g^3*i^2*n + 3*(13*g^3*i^2*n - 60*g^3*i^2*log(e))*a*b^5*c^2*d^4 - 3*(7*g^3*i
^2*n + 120*g^3*i^2*log(e))*a^2*b^4*c*d^5 - (19*g^3*i^2*n + 60*g^3*i^2*log(e
))*a^3*b^3*d^6)*B^2*x^3 + 3*(b^6*c^4*d^2*g^3*i^2*n - 6*a*b^5*c^3*d^3*g^3*i^
2*n + a^4*b^2*d^6*g^3*i^2*n - 30*(g^3*i^2*n - 6*g^3*i^2*log(e))*a^2*b^4*c^2
*d^4 + 2*(17*g^3*i^2*n + 60*g^3*i^2*log(e))*a^3*b^3*c*d^5)*B^2*x^2 - 6*(b^6
*c^5*d*g^3*i^2*n - 6*a*b^5*c^4*d^2*g^3*i^2*n + 15*a^2*b^4*c^3*d^3*g^3*i^2*n
 - 6*a^4*b^2*c*d^5*g^3*i^2*n + a^5*b*d^6*g^3*i^2*n - 5*(g^3*i^2*n + 12*g^3*
i^2*log(e))*a^3*b^3*c^2*d^4)*B^2*x + 6*(15*a^4*b^2*c^2*d^4*g^3*i^2*n - 6*a^
5*b*c*d^5*g^3*i^2*n + a^6*d^6*g^3*i^2*n)*B^2*log(b*x + a) + 6*(b^6*c^6*g^3*
i^2*n - 6*a*b^5*c^5*d*g^3*i^2*n + 15*a^2*b^4*c^4*d^2*g^3*i^2*n - 20*a^3*b^3
*c^3*d^3*g^3*i^2*n)*B^2*log(d*x + c) + 6*(10*B^2*b^6*d^6*g^3*i^2*x^6 + 60*B
^2*a^3*b^3*c^2*d^4*g^3*i^2*x + 12*(2*b^6*c*d^5*g^3*i^2 + 3*a*b^5*d^6*g^3*i^
2)*B^2*x^5 + 15*(b^6*c^2*d^4*g^3*i^2 + 6*a*b^5*c*d^5*g^3*i^2 + 3*a^2*b^4*d^
6*g^3*i^2)*B^2*x^4 + 20*(3*a*b^5*c^2*d^4*g^3*i^2 + 6*a^2*b^4*c*d^5*g^3*i^2
+ a^3*b^3*d^6*g^3*i^2)*B^2*x^3 + 30*(3*a^2*b^4*c^2*d^4*g^3*i^2 + 2*a^3*b^3*
c*d^5*g^3*i^2)*B^2*x^2)*log((b*x + a)^n))*log((d*x + c)^n))/(b^3*d^4)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a\,g+b\,g\,x\right)^3\,{\left(c\,i+d\,i\,x\right)}^2\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^
2,x)
```

```
[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^
2, x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2
,x)
```

```
[Out] Timed out
```

3.169 $\int (ag+bgx)^2(ci+dix)^2 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=819

$$\frac{Bg^2i^2n\left(2A+3Bn+2B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log\left(\frac{bc-ad}{b(c+dx)}\right)(bc-ad)^5}{30b^3d^3}+\frac{B^2g^2i^2n^2\log\left(\frac{a+bx}{c+dx}\right)(bc-ad)^5}{30b^3d^3}+\frac{B^2g^2i^2n^2\log}{}$$

```
[Out] -1/10*B^2*(-a*d+b*c)^4*g^2*i^2*n^2*x/b^2/d^2-1/20*B^2*(-a*d+b*c)^3*g^2*i^2*
n^2*(d*x+c)^2/b/d^3+1/30*B^2*(-a*d+b*c)^2*g^2*i^2*n^2*(d*x+c)^3/d^3-1/30*B*
(-a*d+b*c)^3*g^2*i^2*n*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^3/d-1/15
*B*(-a*d+b*c)^2*g^2*i^2*n*(b*x+a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^3-1/5
*B*(-a*d+b*c)^3*g^2*i^2*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b/d^3+4
/15*B*(-a*d+b*c)^2*g^2*i^2*n*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^3-
1/10*b*B*(-a*d+b*c)*g^2*i^2*n*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^3
+1/30*(-a*d+b*c)^2*g^2*i^2*(b*x+a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^3+
1/10*(-a*d+b*c)*g^2*i^2*(b*x+a)^3*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2
/b^2+1/5*g^2*i^2*(b*x+a)^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/
30*B*(-a*d+b*c)^4*g^2*i^2*n*(b*x+a)*(2*A+B*n+2*B*ln(e*((b*x+a)/(d*x+c))^n))
/b^3/d^2+1/30*B*(-a*d+b*c)^5*g^2*i^2*n*(2*A+3*B*n+2*B*ln(e*((b*x+a)/(d*x+c)
)^n))*ln((-a*d+b*c)/b/(d*x+c))/b^3/d^3+1/30*B^2*(-a*d+b*c)^5*g^2*i^2*n^2*ln
((b*x+a)/(d*x+c))/b^3/d^3+1/10*B^2*(-a*d+b*c)^5*g^2*i^2*n^2*ln(d*x+c)/b^3/d
^3+1/15*B^2*(-a*d+b*c)^5*g^2*i^2*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^3/d^3
```

Rubi [A] time = 2.61, antiderivative size = 714, normalized size of antiderivative = 0.87, number of steps used = 71, number of rules used = 13, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.289, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^2i^2n^2(bc-ad)^5\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{15b^3d^3}-\frac{Bg^2i^2n(bc-ad)^5\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{15b^3d^3}+\frac{d^2g^2i^2(a+bx}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^
2,x]
```

```
[Out] (A*B*(b*c - a*d)^4*g^2*i^2*n*x)/(15*b^2*d^2) - (B^2*(b*c - a*d)^4*g^2*i^2*n
^2*x)/(15*b^2*d^2) + (B^2*(b*c - a*d)^3*g^2*i^2*n^2*(a + b*x)^2)/(20*b^3*d)
 + (B^2*(b*c - a*d)^2*g^2*i^2*n^2*(a + b*x)^3)/(30*b^3) + (B^2*(b*c - a*d)^
4*g^2*i^2*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(15*b^3*d^2) - (B*(b*
c - a*d)^3*g^2*i^2*n*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3
0*b^3*d) - (B*(b*c - a*d)^2*g^2*i^2*n*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(
c + d*x))^n]))/(5*b^3) - (B*d*(b*c - a*d)*g^2*i^2*n*(a + b*x)^4*(A + B*Log[
e*((a + b*x)/(c + d*x))^n]))/(10*b^3) + ((b*c - a*d)^2*g^2*i^2*(a + b*x)^3*
(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*b^3) + (d*(b*c - a*d)*g^2*i^2*
(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^3) + (d^2*g^2*i^
2*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(5*b^3) + (B^2*(b*c
 - a*d)^5*g^2*i^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(15*b
^3*d^3) - (B*(b*c - a*d)^5*g^2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
*Log[c + d*x])/(15*b^3*d^3) - (B^2*(b*c - a*d)^5*g^2*i^2*n^2*Log[c + d*x]^2
)/(30*b^3*d^3) + (B^2*(b*c - a*d)^5*g^2*i^2*n^2*PolyLog[2, (b*(c + d*x))/(b
*c - a*d)])/(15*b^3*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (169c+169dx)^2(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx = \int\left(\frac{(-bc+ad)^2g^2(169c+169dx)^2\left(A+B\log\left(e\right.\right.}{d^2}\right.$$

$$= \frac{\left(b^2g^2\right)\int(169c+169dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{28561d^2}$$

$$= \frac{28561(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{3d^3}$$

$$= \frac{28561(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{3d^3}$$

$$= \frac{28561(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{3d^3}$$

$$= \frac{28561(bc-ad)^2g^2(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{3d^3}$$

$$= -\frac{28561AB(bc-ad)^4g^2nx}{15b^2d^2} - \frac{28561B(bc-ad)^3g^2}{}$$

$$= -\frac{28561AB(bc-ad)^4g^2nx}{15b^2d^2} - \frac{28561B^2(bc-ad)^4g}{}$$

$$= -\frac{28561AB(bc-ad)^4g^2nx}{15b^2d^2} - \frac{28561B^2(bc-ad)^4g}{}$$

$$= -\frac{28561AB(bc-ad)^4g^2nx}{15b^2d^2} - \frac{28561B^2(bc-ad)^4g}{15b^2d^2}$$

$$= -\frac{28561AB(bc-ad)^4g^2nx}{15b^2d^2} - \frac{28561B^2(bc-ad)^4g}{15b^2d^2}$$

$$= -\frac{28561AB(bc-ad)^4g^2nx}{15b^2d^2} - \frac{28561B^2(bc-ad)^4g}{15b^2d^2}$$

Mathematica [A] time = 1.02, size = 1254, normalized size = 1.53

$$\frac{g^2i^2\left(12d^5\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2(a+bx)^5+30d^4(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2(a+bx)^4+20d^3(bc-ad)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n])^2,x]
```

```
[Out] (g^2*i^2*(20*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x
))^n])^2 + 30*d^4*(b*c - a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n])^2 + 12*d^5*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 20*
B*(b*c - a*d)^3*n*(2*A*b*d*(b*c - a*d)*x + 2*B*d*(b*c - a*d)*(a + b*x)*Log[
e*((a + b*x)/(c + d*x))^n] - d^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d
*x))^n]) - 2*B*(b*c - a*d)^2*n*Log[c + d*x] - 2*(b*c - a*d)^2*(A + B*Log[e*
((a + b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(b*d*x + (-(b*c) +
 a*d)*Log[c + d*x]) + B*(b*c - a*d)^2*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d
)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))
 - 10*B*(b*c - a*d)^2*n*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a +
 b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A
+ B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*d^3*(a + b*x)^3*(A + B*Log[e*((a +
b*x)/(c + d*x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 6*(b*c - a*d)^3*(A
 + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(2*b*d*
(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c
- a*d)^2*n*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 3*B*(b*c - a*d)^3*n*((2*
Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[
2, (b*(c + d*x))/(b*c - a*d)])) + B*(b*c - a*d)*n*(24*A*b*d*(b*c - a*d)^3*x
 + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 12*d^2*(
b*c - a*d)^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 8*d^3*(b*
c - a*d)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*d^4*(a + b*
x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 24*B*(b*c - a*d)^4*n*Log[c +
d*x] - 24*(b*c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x]
 + 4*B*(b*c - a*d)^2*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*
d)^2*Log[c + d*x]) + B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c)
 + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 1
2*B*(b*c - a*d)^3*n*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 12*B*(b*c - a*d
)^4*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] +
2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))))/(60*b^3*d^3)
```

fricas [F] time = 1.06, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2b^2d^2g^2i^2x^4 + A^2a^2c^2g^2i^2 + 2\left(A^2b^2cd + A^2abd^2\right)g^2i^2x^3 + \left(A^2b^2c^2 + 4\,A^2abcd + A^2a^2d^2\right)g^2i^2x^2 + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="fricas")
```

```
[Out] integral(A^2*b^2*d^2*g^2*i^2*x^4 + A^2*a^2*c^2*g^2*i^2 + 2*(A^2*b^2*c*d + A
^2*a*b*d^2)*g^2*i^2*x^3 + (A^2*b^2*c^2 + 4*A^2*a*b*c*d + A^2*a^2*d^2)*g^2*i
^2*x^2 + 2*(A^2*a*b*c^2 + A^2*a^2*c*d)*g^2*i^2*x + (B^2*b^2*d^2*g^2*i^2*x^4
 + B^2*a^2*c^2*g^2*i^2 + 2*(B^2*b^2*c*d + B^2*a*b*d^2)*g^2*i^2*x^3 + (B^2*b
^2*c^2 + 4*B^2*a*b*c*d + B^2*a^2*d^2)*g^2*i^2*x^2 + 2*(B^2*a*b*c^2 + B^2*a^
2*c*d)*g^2*i^2*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^2*d^2*g^2*i^2
*x^4 + A*B*a^2*c^2*g^2*i^2 + 2*(A*B*b^2*c*d + A*B*a*b*d^2)*g^2*i^2*x^3 + (A
*B*b^2*c^2 + 4*A*B*a*b*c*d + A*B*a^2*d^2)*g^2*i^2*x^2 + 2*(A*B*a*b*c^2 + A*
B*a^2*c*d)*g^2*i^2*x)*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{2} \left(dix+ci\right)^{2} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 7.58, size = 4247, normalized size = 5.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="maxima")
```

```
[Out] 2/5*A*B*b^2*d^2*g^2*i^2*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/5*A^
2*b^2*d^2*g^2*i^2*x^5 + A*B*b^2*c*d*g^2*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d
*x + c))^n) + A*B*a*b*d^2*g^2*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n
) + 1/2*A^2*b^2*c*d*g^2*i^2*x^4 + 1/2*A^2*a*b*d^2*g^2*i^2*x^4 + 2/3*A*B*b^2
*c^2*g^2*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 8/3*A*B*a*b*c*d*g
^2*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2/3*A*B*a^2*d^2*g^2*i^2
*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*A^2*b^2*c^2*g^2*i^2*x^3 +
 4/3*A^2*a*b*c*d*g^2*i^2*x^3 + 1/3*A^2*a^2*d^2*g^2*i^2*x^3 + 2*A*B*a*b*c^2*
g^2*i^2*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*A*B*a^2*c*d*g^2*i^2*
x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a*b*c^2*g^2*i^2*x^2 + A^2*
a^2*c*d*g^2*i^2*x^2 + 1/30*A*B*b^2*d^2*g^2*i^2*n*(12*a^5*log(b*x + a)/b^5 -
 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2
- a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)
*x)/(b^4*d^4)) - 1/6*A*B*b^2*c*d*g^2*i^2*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*
log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^
3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/6*A*B*a*b*d^2*g^2*i^2*n*(6
*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)
*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))
+ 1/3*A*B*b^2*c^2*g^2*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^
3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 4/3*A*
B*a*b*c*d*g^2*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^
2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 1/3*A*B*a^2*d^
2*g^2*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d -
a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 2*A*B*a*b*c^2*g^2*i^2*
n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 2*A
*B*a^2*c*d*g^2*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c -
a*d)*x/(b*d)) + 2*A*B*a^2*c^2*g^2*i^2*n*(a*log(b*x + a)/b - c*log(d*x + c)/
d) + 2*A*B*a^2*c^2*g^2*i^2*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a
^2*c^2*g^2*i^2*x - 1/30*(9*a^3*b*c^2*d^3*g^2*i^2*n^2 - 2*a^4*c*d^4*g^2*i^2*
n^2 + 2*b^4*c^5*g^2*i^2*n*log(e) + 2*(g^2*i^2*n^2 - 5*g^2*i^2*n*log(e))*a*b
^3*c^4*d - (9*g^2*i^2*n^2 - 20*g^2*i^2*n*log(e))*a^2*b^2*c^3*d^2)*B^2*log(d
*x + c)/(b^2*d^3) - 1/15*(b^5*c^5*g^2*i^2*n^2 - 5*a*b^4*c^4*d*g^2*i^2*n^2 +
 10*a^2*b^3*c^3*d^2*g^2*i^2*n^2 - 10*a^3*b^2*c^2*d^3*g^2*i^2*n^2 + 5*a^4*b*
c*d^4*g^2*i^2*n^2 - a^5*d^5*g^2*i^2*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b
*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^3*d^3) + 1/60*(1
2*B^2*b^5*d^5*g^2*i^2*x^5*log(e)^2 - 6*((g^2*i^2*n*log(e) - 5*g^2*i^2*log(e
)^2)*b^5*c*d^4 - (g^2*i^2*n*log(e) + 5*g^2*i^2*log(e)^2)*a*b^4*d^5)*B^2*x^4
 + 2*((g^2*i^2*n^2 - 6*g^2*i^2*n*log(e) + 10*g^2*i^2*log(e)^2)*b^5*c^2*d^3
- 2*(g^2*i^2*n^2 - 20*g^2*i^2*log(e)^2)*a*b^4*c*d^4 + (g^2*i^2*n^2 + 6*g^2*
i^2*n*log(e) + 10*g^2*i^2*log(e)^2)*a^2*b^3*d^5)*B^2*x^3 + ((3*g^2*i^2*n^2
- 2*g^2*i^2*n*log(e))*b^5*c^3*d^2 - 3*(g^2*i^2*n^2 + 10*g^2*i^2*n*log(e) -
```

```
20*g^2*i^2*log(e)^2)*a*b^4*c^2*d^3 - 3*(g^2*i^2*n^2 - 10*g^2*i^2*n*log(e) -
 20*g^2*i^2*log(e)^2)*a^2*b^3*c*d^4 + (3*g^2*i^2*n^2 + 2*g^2*i^2*n*log(e))*
a^3*b^2*d^5)*B^2*x^2 - 2*(10*a^3*b^2*c^2*d^3*g^2*i^2*n^2 - 5*a^4*b*c*d^4*g^
2*i^2*n^2 + a^5*d^5*g^2*i^2*n^2)*B^2*log(b*x + a)^2 + 4*(b^5*c^5*g^2*i^2*n^
2 - 5*a*b^4*c^4*d*g^2*i^2*n^2 + 10*a^2*b^3*c^3*d^2*g^2*i^2*n^2)*B^2*log(b*x
 + a)*log(d*x + c) - 2*(b^5*c^5*g^2*i^2*n^2 - 5*a*b^4*c^4*d*g^2*i^2*n^2 + 1
0*a^2*b^3*c^3*d^2*g^2*i^2*n^2)*B^2*log(d*x + c)^2 - 2*(2*(g^2*i^2*n^2 - g^2
*i^2*n*log(e))*b^5*c^4*d - (11*g^2*i^2*n^2 - 10*g^2*i^2*n*log(e))*a*b^4*c^3
*d^2 + 6*(3*g^2*i^2*n^2 - 5*g^2*i^2*log(e)^2)*a^2*b^3*c^2*d^3 - (11*g^2*i^2
*n^2 + 10*g^2*i^2*n*log(e))*a^3*b^2*c*d^4 + 2*(g^2*i^2*n^2 + g^2*i^2*n*log(
e))*a^4*b*d^5)*B^2*x + 2*(2*a*b^4*c^4*d*g^2*i^2*n^2 - 9*a^2*b^3*c^3*d^2*g^2
*i^2*n^2 + 2*a^5*d^5*g^2*i^2*n*log(e) + (9*g^2*i^2*n^2 + 20*g^2*i^2*n*log(e
))*a^3*b^2*c^2*d^3 - 2*(g^2*i^2*n^2 + 5*g^2*i^2*n*log(e))*a^4*b*c*d^4)*B^2*
log(b*x + a) + 2*(6*B^2*b^5*d^5*g^2*i^2*x^5 + 30*B^2*a^2*b^3*c^2*d^3*g^2*i^
2*x + 15*(b^5*c*d^4*g^2*i^2 + a*b^4*d^5*g^2*i^2)*B^2*x^4 + 10*(b^5*c^2*d^3*
g^2*i^2 + 4*a*b^4*c*d^4*g^2*i^2 + a^2*b^3*d^5*g^2*i^2)*B^2*x^3 + 30*(a*b^4*
c^2*d^3*g^2*i^2 + a^2*b^3*c*d^4*g^2*i^2)*B^2*x^2)*log((b*x + a)^n)^2 + 2*(6
*B^2*b^5*d^5*g^2*i^2*x^5 + 30*B^2*a^2*b^3*c^2*d^3*g^2*i^2*x + 15*(b^5*c*d^4
*g^2*i^2 + a*b^4*d^5*g^2*i^2)*B^2*x^4 + 10*(b^5*c^2*d^3*g^2*i^2 + 4*a*b^4*c
*d^4*g^2*i^2 + a^2*b^3*d^5*g^2*i^2)*B^2*x^3 + 30*(a*b^4*c^2*d^3*g^2*i^2 + a
^2*b^3*c*d^4*g^2*i^2)*B^2*x^2)*log((d*x + c)^n)^2 + 2*(12*B^2*b^5*d^5*g^2*i
^2*x^5*log(e) - 3*((g^2*i^2*n - 10*g^2*i^2*log(e))*b^5*c*d^4 - (g^2*i^2*n +
 10*g^2*i^2*log(e))*a*b^4*d^5)*B^2*x^4 + 2*(40*a*b^4*c*d^4*g^2*i^2*log(e) -
 (3*g^2*i^2*n - 10*g^2*i^2*log(e))*b^5*c^2*d^3 + (3*g^2*i^2*n + 10*g^2*i^2*
log(e))*a^2*b^3*d^5)*B^2*x^3 - (b^5*c^3*d^2*g^2*i^2*n - a^3*b^2*d^5*g^2*i^2
*n + 15*(g^2*i^2*n - 4*g^2*i^2*log(e))*a*b^4*c^2*d^3 - 15*(g^2*i^2*n + 4*g^
2*i^2*log(e))*a^2*b^3*c*d^4)*B^2*x^2 + 2*(b^5*c^4*d*g^2*i^2*n - 5*a*b^4*c^3
*d^2*g^2*i^2*n + 5*a^3*b^2*c*d^4*g^2*i^2*n - a^4*b*d^5*g^2*i^2*n + 30*a^2*b
^3*c^2*d^3*g^2*i^2*log(e))*B^2*x + 2*(10*a^3*b^2*c^2*d^3*g^2*i^2*n - 5*a^4*
b*c*d^4*g^2*i^2*n + a^5*d^5*g^2*i^2*n)*B^2*log(b*x + a) - 2*(b^5*c^5*g^2*i^
2*n - 5*a*b^4*c^4*d*g^2*i^2*n + 10*a^2*b^3*c^3*d^2*g^2*i^2*n)*B^2*log(d*x +
 c))*log((b*x + a)^n) - 2*(12*B^2*b^5*d^5*g^2*i^2*x^5*log(e) - 3*((g^2*i^2*
n - 10*g^2*i^2*log(e))*b^5*c*d^4 - (g^2*i^2*n + 10*g^2*i^2*log(e))*a*b^4*d^
5)*B^2*x^4 + 2*(40*a*b^4*c*d^4*g^2*i^2*log(e) - (3*g^2*i^2*n - 10*g^2*i^2*l
og(e))*b^5*c^2*d^3 + (3*g^2*i^2*n + 10*g^2*i^2*log(e))*a^2*b^3*d^5)*B^2*x^3
 - (b^5*c^3*d^2*g^2*i^2*n - a^3*b^2*d^5*g^2*i^2*n + 15*(g^2*i^2*n - 4*g^2*i
^2*log(e))*a*b^4*c^2*d^3 - 15*(g^2*i^2*n + 4*g^2*i^2*log(e))*a^2*b^3*c*d^4)
*B^2*x^2 + 2*(b^5*c^4*d*g^2*i^2*n - 5*a*b^4*c^3*d^2*g^2*i^2*n + 5*a^3*b^2*c
*d^4*g^2*i^2*n - a^4*b*d^5*g^2*i^2*n + 30*a^2*b^3*c^2*d^3*g^2*i^2*log(e))*B
^2*x + 2*(10*a^3*b^2*c^2*d^3*g^2*i^2*n - 5*a^4*b*c*d^4*g^2*i^2*n + a^5*d^5*
g^2*i^2*n)*B^2*log(b*x + a) - 2*(b^5*c^5*g^2*i^2*n - 5*a*b^4*c^4*d*g^2*i^2*
n + 10*a^2*b^3*c^3*d^2*g^2*i^2*n)*B^2*log(d*x + c) + 2*(6*B^2*b^5*d^5*g^2*i
^2*x^5 + 30*B^2*a^2*b^3*c^2*d^3*g^2*i^2*x + 15*(b^5*c*d^4*g^2*i^2 + a*b^4*d
^5*g^2*i^2)*B^2*x^4 + 10*(b^5*c^2*d^3*g^2*i^2 + 4*a*b^4*c*d^4*g^2*i^2 + a^2
*b^3*d^5*g^2*i^2)*B^2*x^3 + 30*(a*b^4*c^2*d^3*g^2*i^2 + a^2*b^3*c*d^4*g^2*i
^2)*B^2*x^2)*log((b*x + a)^n))*log((d*x + c)^n))/(b^3*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a g + b g x\right)^2 (c i + d i x)^2 \left(A + B \ln\left(e \left(\frac{a + b x}{c + d x}\right)^n\right)\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^
2,x)
```

```
[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^
2, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2
,x)
```

```
[Out] Timed out
```

3.170 $\int (ag+bgx)(ci+dix)^2 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=635

$$-\frac{Bgi^2n(bc-ad)^4\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A+Bn\right)}{6b^3d^2}-\frac{Bgi^2n(a+bx)(bc-ad)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right.}{6b^3d}$$

```
[Out] 1/12*B^2*(-a*d+b*c)^3*g*i^2*n^2*x/b^2/d+1/12*B^2*(-a*d+b*c)^2*g*i^2*n^2*(d*
x+c)^2/b/d^2-1/6*B*(-a*d+b*c)^3*g*i^2*n*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))
^n))/b^3/d-1/6*B*(-a*d+b*c)^2*g*i^2*n*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))
^n))/b^3+1/4*B*(-a*d+b*c)^2*g*i^2*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n
))/b/d^2-1/6*B*(-a*d+b*c)*g*i^2*n*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))
/d^2+1/12*(-a*d+b*c)^2*g*i^2*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^
3+1/6*(-a*d+b*c)*g*i^2*(b*x+a)^2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/
b^2+1/4*g*i^2*(b*x+a)^2*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b-1/6*B
*(-a*d+b*c)^4*g*i^2*n*(A+B*n+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(
d*x+c))/b^3/d^2-1/12*B^2*(-a*d+b*c)^4*g*i^2*n^2*ln((b*x+a)/(d*x+c))/b^3/d^2
-1/4*B^2*(-a*d+b*c)^4*g*i^2*n^2*ln(d*x+c)/b^3/d^2-1/6*B^2*(-a*d+b*c)^4*g*i^
2*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^3/d^2
```

Rubi [A] time = 1.66, antiderivative size = 614, normalized size of antiderivative = 0.97, number of steps used = 44, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.302, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2gi^2n^2(bc-ad)^4\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{6b^3d^2}+\frac{Bgi^2n(bc-ad)^4\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{6b^3d^2}+\frac{ABgi^2nx(bc-}{6b^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,
x]
```

```
[Out] (A*B*(b*c - a*d)^3*g*i^2*n*x)/(6*b^2*d) + (B^2*(b*c - a*d)^3*g*i^2*n^2*x)/(
12*b^2*d) + (B^2*(b*c - a*d)^2*g*i^2*n^2*(c + d*x)^2)/(12*b*d^2) + (B^2*(b*
c - a*d)^4*g*i^2*n^2*Log[a + b*x])/(12*b^3*d^2) - (B^2*(b*c - a*d)^4*g*i^2*
n^2*Log[a + b*x]^2)/(12*b^3*d^2) + (B^2*(b*c - a*d)^3*g*i^2*n*(a + b*x)*Log
[e*((a + b*x)/(c + d*x))^n])/(6*b^3*d) + (B*(b*c - a*d)^2*g*i^2*n*(c + d*x)
^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(12*b*d^2) - (B*(b*c - a*d)*g*i^
2*n*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*d^2) + (B*(b*c -
 a*d)^4*g*i^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^3
*d^2) - ((b*c - a*d)*g*i^2*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n
])^2)/(3*d^2) + (b*g*i^2*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
^2)/(4*d^2) - (B^2*(b*c - a*d)^4*g*i^2*n^2*Log[c + d*x])/(6*b^3*d^2) + (B^2
*(b*c - a*d)^4*g*i^2*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(6*b^
3*d^2) + (B^2*(b*c - a*d)^4*g*i^2*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d
))])/(6*b^3*d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (170c+170dx)^2(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx = \int \left(\frac{(-bc+ad)g(170c+170dx)^2\left(A+B\log\left(e\left(\frac{a+}{c+}\right.\right.\right.}{d}\right.$$

$$= \frac{(bg)\int (170c+170dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 d}{170d}$$

$$= -\frac{28900(bc-ad)g(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^{n}\right.\right.}{3d^2}$$

$$= -\frac{28900(bc-ad)g(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^{n}\right.\right.}{3d^2}$$

$$= -\frac{28900(bc-ad)g(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^{n}\right.\right.}{3d^2}$$

$$= -\frac{28900(bc-ad)g(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^{n}\right.\right.}{3d^2}$$

$$= \frac{14450AB(bc-ad)^3gnx}{3b^2d} + \frac{7225B(bc-ad)^2gn(c+}{}$$

$$= \frac{14450AB(bc-ad)^3gnx}{3b^2d} + \frac{14450B^2(bc-ad)^3gn(a}{3b}$$

$$= \frac{14450AB(bc-ad)^3gnx}{3b^2d} + \frac{14450B^2(bc-ad)^3gn(a}{3b}$$

$$= \frac{14450AB(bc-ad)^3gnx}{3b^2d} + \frac{7225B^2(bc-ad)^3gn^2x}{3b^2d}$$

$$= \frac{14450AB(bc-ad)^3gnx}{3b^2d} + \frac{7225B^2(bc-ad)^3gn^2x}{3b^2d}$$

$$= \frac{14450AB(bc-ad)^3gnx}{3b^2d} + \frac{7225B^2(bc-ad)^3gn^2x}{3b^2d}$$

Mathematica [A] time = 0.64, size = 713, normalized size = 1.12

$$gi^2\left(\frac{4Bn(bc-ad)^2\left(b^2(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2(bc-ad)^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2Abdx(bc-ad)+2Bd(a+bx)(bc-ad)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)-B}{b^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^
n])^2,x]
```

```
[Out] (g*i^2*(-4*(b*c - a*d)*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2
 + 3*b*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + (4*B*(b*c - a
*d)^2*n*(2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*n*(b*d*x + (b*c - a*d)*Log[a
 + b*x]) + 2*B*d*(b*c - a*d)*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + b^2
*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*(b*c - a*d)^2*Log[a
 + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*B*(b*c - a*d)^2*n*Log[c
+ d*x] - B*(b*c - a*d)^2*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x)
)/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^3 - (B*(b
*c - a*d)*n*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*n*(b*d*x + (b*c -
a*d)*Log[a + b*x]) - B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2
 + 2*(b*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a
+ b*x)/(c + d*x))^n] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]) + 2*b^3*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
 + 6*(b*c - a*d)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*
B*(b*c - a*d)^3*n*Log[c + d*x] - 3*B*(b*c - a*d)^3*n*(Log[a + b*x]*(Log[a +
 b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b
*c) + a*d)])))/b^3))/(12*d^2)
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2bd^2gi^2x^3 + A^2ac^2gi^2 + \left(2\,A^2bcd + A^2ad^2\right)gi^2x^2 + \left(A^2bc^2 + 2\,A^2acd\right)gi^2x + \left(B^2bd^2gi^2x^3 + B^2ac^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="fricas")
```

```
[Out] integral(A^2*b*d^2*g*i^2*x^3 + A^2*a*c^2*g*i^2 + (2*A^2*b*c*d + A^2*a*d^2)*
g*i^2*x^2 + (A^2*b*c^2 + 2*A^2*a*c*d)*g*i^2*x + (B^2*b*d^2*g*i^2*x^3 + B^2*
a*c^2*g*i^2 + (2*B^2*b*c*d + B^2*a*d^2)*g*i^2*x^2 + (B^2*b*c^2 + 2*B^2*a*c*
d)*g*i^2*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b*d^2*g*i^2*x^3 + A*B
*a*c^2*g*i^2 + (2*A*B*b*c*d + A*B*a*d^2)*g*i^2*x^2 + (A*B*b*c^2 + 2*A*B*a*c
*d)*g*i^2*x)*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \left(bgx + ag\right)\left(dix + ci\right)^2 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)*(d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 7.61, size = 2662, normalized size = 4.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="maxima")
```

```
[Out] 1/2*A*B*b*d^2*g*i^2*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A^2*b*
d^2*g*i^2*x^4 + 4/3*A*B*b*c*d*g*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))
^n) + 2/3*A*B*a*d^2*g*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2/3*
A^2*b*c*d*g*i^2*x^3 + 1/3*A^2*a*d^2*g*i^2*x^3 + A*B*b*c^2*g*i^2*x^2*log(e*(
b*x/(d*x + c) + a/(d*x + c))^n) + 2*A*B*a*c*d*g*i^2*x^2*log(e*(b*x/(d*x + c
) + a/(d*x + c))^n) + 1/2*A^2*b*c^2*g*i^2*x^2 + A^2*a*c*d*g*i^2*x^2 - 1/12*
A*B*b*d^2*g*i^2*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^
3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3
*d^3)*x)/(b^3*d^3)) + 2/3*A*B*b*c*d*g*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3
*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^
2*d^2)) + 1/3*A*B*a*d^2*g*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c
)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - A*
B*b*c^2*g*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*
x/(b*d)) - 2*A*B*a*c*d*g*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2
 + (b*c - a*d)*x/(b*d)) + 2*A*B*a*c^2*g*i^2*n*(a*log(b*x + a)/b - c*log(d*x
 + c)/d) + 2*A*B*a*c^2*g*i^2*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2
*a*c^2*g*i^2*x - 1/12*(7*a^2*b*c^2*d^2*g*i^2*n^2 - 2*a^3*c*d^3*g*i^2*n^2 +
(g*i^2*n^2 - 2*g*i^2*n*log(e))*b^3*c^4 - 2*(3*g*i^2*n^2 - 4*g*i^2*n*log(e))
*a*b^2*c^3*d)*B^2*log(d*x + c)/(b^2*d^2) + 1/6*(b^4*c^4*g*i^2*n^2 - 4*a*b^3
*c^3*d*g*i^2*n^2 + 6*a^2*b^2*c^2*d^2*g*i^2*n^2 - 4*a^3*b*c*d^3*g*i^2*n^2 +
a^4*d^4*g*i^2*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog
(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^3*d^2) + 1/12*(3*B^2*b^4*d^4*g*i^2*x^4
*log(e)^2 - 2*((g*i^2*n*log(e) - 4*g*i^2*log(e)^2)*b^4*c*d^3 - (g*i^2*n*log
(e) + 2*g*i^2*log(e)^2)*a*b^3*d^4)*B^2*x^3 + ((g*i^2*n^2 - 5*g*i^2*n*log(e)
 + 6*g*i^2*log(e)^2)*b^4*c^2*d^2 - 2*(g*i^2*n^2 - 2*g*i^2*n*log(e) - 6*g*i^
2*log(e)^2)*a*b^3*c*d^3 + (g*i^2*n^2 + g*i^2*n*log(e))*a^2*b^2*d^4)*B^2*x^2
 - (6*a^2*b^2*c^2*d^2*g*i^2*n^2 - 4*a^3*b*c*d^3*g*i^2*n^2 + a^4*d^4*g*i^2*n
^2)*B^2*log(b*x + a)^2 - 2*(b^4*c^4*g*i^2*n^2 - 4*a*b^3*c^3*d*g*i^2*n^2)*B^
2*log(b*x + a)*log(d*x + c) + (b^4*c^4*g*i^2*n^2 - 4*a*b^3*c^3*d*g*i^2*n^2)
*B^2*log(d*x + c)^2 + ((3*g*i^2*n^2 - 2*g*i^2*n*log(e))*b^4*c^3*d - (7*g*i^
2*n^2 + 4*g*i^2*n*log(e) - 12*g*i^2*log(e)^2)*a*b^3*c^2*d^2 + (5*g*i^2*n^2
+ 8*g*i^2*n*log(e))*a^2*b^2*c*d^3 - (g*i^2*n^2 + 2*g*i^2*n*log(e))*a^3*b*d^
4)*B^2*x - (2*a*b^3*c^3*d*g*i^2*n^2 - (g*i^2*n^2 + 12*g*i^2*n*log(e))*a^2*b
^2*c^2*d^2 - 2*(g*i^2*n^2 - 4*g*i^2*n*log(e))*a^3*b*c*d^3 + (g*i^2*n^2 - 2*
g*i^2*n*log(e))*a^4*d^4)*B^2*log(b*x + a) + (3*B^2*b^4*d^4*g*i^2*x^4 + 12*B
^2*a*b^3*c^2*d^2*g*i^2*x + 4*(2*b^4*c*d^3*g*i^2 + a*b^3*d^4*g*i^2)*B^2*x^3
+ 6*(b^4*c^2*d^2*g*i^2 + 2*a*b^3*c*d^3*g*i^2)*B^2*x^2)*log((b*x + a)^n)^2 +
 (3*B^2*b^4*d^4*g*i^2*x^4 + 12*B^2*a*b^3*c^2*d^2*g*i^2*x + 4*(2*b^4*c*d^3*g
*i^2 + a*b^3*d^4*g*i^2)*B^2*x^3 + 6*(b^4*c^2*d^2*g*i^2 + 2*a*b^3*c*d^3*g*i^
2)*B^2*x^2)*log((d*x + c)^n)^2 + (6*B^2*b^4*d^4*g*i^2*x^4*log(e) - 2*((g*i^
2*n - 8*g*i^2*log(e))*b^4*c*d^3 - (g*i^2*n + 4*g*i^2*log(e))*a*b^3*d^4)*B^2
*x^3 + (a^2*b^2*d^4*g*i^2*n - (5*g*i^2*n - 12*g*i^2*log(e))*b^4*c^2*d^2 + 4
*(g*i^2*n + 6*g*i^2*log(e))*a*b^3*c*d^3)*B^2*x^2 - 2*(b^4*c^3*d*g*i^2*n - 4
*a^2*b^2*c*d^3*g*i^2*n + a^3*b*d^4*g*i^2*n + 2*(g*i^2*n - 6*g*i^2*log(e))*a
*b^3*c^2*d^2)*B^2*x + 2*(6*a^2*b^2*c^2*d^2*g*i^2*n - 4*a^3*b*c*d^3*g*i^2*n
+ a^4*d^4*g*i^2*n)*B^2*log(b*x + a) + 2*(b^4*c^4*g*i^2*n - 4*a*b^3*c^3*d*g*
i^2*n)*B^2*log(d*x + c))*log((b*x + a)^n) - (6*B^2*b^4*d^4*g*i^2*x^4*log(e)
 - 2*((g*i^2*n - 8*g*i^2*log(e))*b^4*c*d^3 - (g*i^2*n + 4*g*i^2*log(e))*a*b
^3*d^4)*B^2*x^3 + (a^2*b^2*d^4*g*i^2*n - (5*g*i^2*n - 12*g*i^2*log(e))*b^4*
c^2*d^2 + 4*(g*i^2*n + 6*g*i^2*log(e))*a*b^3*c*d^3)*B^2*x^2 - 2*(b^4*c^3*d*
g*i^2*n - 4*a^2*b^2*c*d^3*g*i^2*n + a^3*b*d^4*g*i^2*n + 2*(g*i^2*n - 6*g*i^
2*log(e))*a*b^3*c^2*d^2)*B^2*x + 2*(6*a^2*b^2*c^2*d^2*g*i^2*n - 4*a^3*b*c*d
^3*g*i^2*n + a^4*d^4*g*i^2*n)*B^2*log(b*x + a) + 2*(b^4*c^4*g*i^2*n - 4*a*b
^3*c^3*d*g*i^2*n)*B^2*log(d*x + c) + 2*(3*B^2*b^4*d^4*g*i^2*x^4 + 12*B^2*a*
b^3*c^2*d^2*g*i^2*x + 4*(2*b^4*c*d^3*g*i^2 + a*b^3*d^4*g*i^2)*B^2*x^3 + 6*(
b^4*c^2*d^2*g*i^2 + 2*a*b^3*c*d^3*g*i^2)*B^2*x^2)*log((b*x + a)^n))*log((d*
x + c)^n))/(b^3*d^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a\,g+b\,g\,x\right)\,{\left(c\,i+d\,i\,x\right)}^2\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,
x)
```

```
[Out] int((a*g + b*g*x)*(c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)
```

```
[Out] Timed out
```

3.171 $\int (ci+dix)^2 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=361

$$\frac{2Bi^2n(bc-ad)^3\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^3d}-\frac{2Bi^2n(a+bx)(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^3}-\frac{Bi^2 n}{}$$

```
[Out] 1/3*B^2*(-a*d+b*c)^2*i^2*n^2*x/b^2-2/3*B*(-a*d+b*c)^2*i^2*n*(b*x+a)*(A+B*ln
(e*((b*x+a)/(d*x+c))^n))/b^3-1/3*B*(-a*d+b*c)*i^2*n*(d*x+c)^2*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))/b/d+1/3*i^2*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/
d+1/3*B^2*(-a*d+b*c)^3*i^2*n^2*ln((b*x+a)/(d*x+c))/b^3/d+B^2*(-a*d+b*c)^3*i
^2*n^2*ln(d*x+c)/b^3/d+2/3*B*(-a*d+b*c)^3*i^2*n*(A+B*ln(e*((b*x+a)/(d*x+c))
^n))*ln(1-b*(d*x+c)/d/(b*x+a))/b^3/d-2/3*B^2*(-a*d+b*c)^3*i^2*n^2*polylog(2
,b*(d*x+c)/d/(b*x+a))/b^3/d
```

Rubi [A] time = 0.54, antiderivative size = 454, normalized size of antiderivative = 1.26, number of steps used = 19, number of rules used = 13, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.371, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$-\frac{2B^2i^2n^2(bc-ad)^3\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{3b^3d}-\frac{2Bi^2n(bc-ad)^3\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{3b^3d}-\frac{2ABi^2nx(bc-a}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]
```

```
[Out] (-2*A*B*(b*c - a*d)^2*i^2*n*x)/(3*b^2) + (B^2*(b*c - a*d)^2*i^2*n^2*x)/(3*b
^2) + (B^2*(b*c - a*d)^3*i^2*n^2*Log[a + b*x])/(3*b^3*d) + (B^2*(b*c - a*d)
^3*i^2*n^2*Log[a + b*x]^2)/(3*b^3*d) - (2*B^2*(b*c - a*d)^2*i^2*n*(a + b*x)
*Log[e*((a + b*x)/(c + d*x))^n])/(3*b^3) - (B*(b*c - a*d)*i^2*n*(c + d*x)^2
*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b*d) - (2*B*(b*c - a*d)^3*i^2*n
*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^3*d) + (i^2*(c +
 d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*d) + (2*B^2*(b*c - a*d
)^3*i^2*n^2*Log[c + d*x])/(3*b^3*d) - (2*B^2*(b*c - a*d)^3*i^2*n^2*Log[a +
b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(3*b^3*d) - (2*B^2*(b*c - a*d)^3*i^2*n
^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(3*b^3*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (171c+171dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx = \frac{9747(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{d} - (2Bn)\int \frac{5000211(bc-}{}$$

$$= \frac{9747(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{d} - \frac{(19494B(bc-ad)}{}$$

$$= \frac{9747(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{d} - \frac{(19494B(bc-ad)}{}$$

$$= \frac{9747(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{d} - \frac{(19494B(bc-ad)}{}$$

$$= -\frac{19494AB(bc-ad)^2nx}{b^2} - \frac{9747B(bc-ad)n(c+dx)^2\left(A+B\right.}{bd}$$

$$= -\frac{19494AB(bc-ad)^2nx}{b^2} - \frac{19494B^2(bc-ad)^2n(a+bx)\log\left(\right.}{b^3}$$

$$= -\frac{19494AB(bc-ad)^2nx}{b^2} - \frac{19494B^2(bc-ad)^2n(a+bx)\log\left(\right.}{b^3}$$

$$= -\frac{19494AB(bc-ad)^2nx}{b^2} + \frac{9747B^2(bc-ad)^2n^2x}{b^2} + \frac{9747B^2(}{}$$

$$= -\frac{19494AB(bc-ad)^2nx}{b^2} + \frac{9747B^2(bc-ad)^2n^2x}{b^2} + \frac{9747B^2(}{}$$

$$= -\frac{19494AB(bc-ad)^2nx}{b^2} + \frac{9747B^2(bc-ad)^2n^2x}{b^2} + \frac{9747B^2(}{}$$

Mathematica [A] time = 0.27, size = 303, normalized size = 0.84

$$\frac{i^2\left((c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2 - \frac{Bn(bc-ad)\left(b^2(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2(bc-ad)^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2Abdx(\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]
```

```
[Out] (i^2*((c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - (B*(b*c - a*d)
*n*(2*A*b*d*(b*c - a*d)*x - B*(b*c - a*d)*n*(b*d*x + (b*c - a*d)*Log[a + b*
x]) + 2*B*d*(b*c - a*d)*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + b^2*(c +
 d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*(b*c - a*d)^2*Log[a + b*
x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*B*(b*c - a*d)^2*n*Log[c + d*x
] - B*(b*c - a*d)^2*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*
c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/b^3))/(3*d)
```

fricas [F] time = 1.02, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2d^2i^2x^2 + 2\,A^2cdi^2x + A^2c^2i^2 + \left(B^2d^2i^2x^2 + 2\,B^2cdi^2x + B^2c^2i^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2 + 2\left(ABd^2i^2x^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fr
icas")
```

```
[Out] integral(A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^2
 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B
*d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n
), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="gi
ac")
```

```
[Out] Timed out
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \left(dix+ci\right)^2 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 6.46, size = 1473, normalized size = 4.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="ma
xima")
```

```
[Out] 2/3*A*B*d^2*i^2*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*A^2*d^2*i^
2*x^3 + 2*A*B*c*d*i^2*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*c*d*
i^2*x^2 + 1/3*A*B*d^2*i^2*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^
3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 2*A*B*
c*d*i^2*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d
)) + 2*A*B*c^2*i^2*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + 2*A*B*c^2*i^2*
```

```
x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*c^2*i^2*x - 1/3*(5*a*b*c^2*d
*i^2*n^2 - 2*a^2*c*d^2*i^2*n^2 - (3*i^2*n^2 - 2*i^2*n*log(e))*b^2*c^3)*B^2*
log(d*x + c)/(b^2*d) - 2/3*(b^3*c^3*i^2*n^2 - 3*a*b^2*c^2*d*i^2*n^2 + 3*a^2
*b*c*d^2*i^2*n^2 - a^3*d^3*i^2*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c -
a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^3*d) + 1/3*(B^2*b^3*d
^3*i^2*x^3*log(e)^2 + 2*B^2*b^3*c^3*i^2*n^2*log(b*x + a)*log(d*x + c) - B^2
*b^3*c^3*i^2*n^2*log(d*x + c)^2 + (a*b^2*d^3*i^2*n*log(e) - (i^2*n*log(e) -
 3*i^2*log(e)^2)*b^3*c*d^2)*B^2*x^2 - (3*a*b^2*c^2*d*i^2*n^2 - 3*a^2*b*c*d^
2*i^2*n^2 + a^3*d^3*i^2*n^2)*B^2*log(b*x + a)^2 + ((i^2*n^2 - 4*i^2*n*log(e
) + 3*i^2*log(e)^2)*b^3*c^2*d - 2*(i^2*n^2 - 3*i^2*n*log(e))*a*b^2*c*d^2 +
(i^2*n^2 - 2*i^2*n*log(e))*a^2*b*d^3)*B^2*x - (2*(2*i^2*n^2 - 3*i^2*n*log(e
))*a*b^2*c^2*d - (7*i^2*n^2 - 6*i^2*n*log(e))*a^2*b*c*d^2 + (3*i^2*n^2 - 2*
i^2*n*log(e))*a^3*d^3)*B^2*log(b*x + a) + (B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*
c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x)*log((b*x + a)^n)^2 + (B^2*b^3*d^3*i^
2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x)*log((d*x + c)^n)^2
 + (2*B^2*b^3*d^3*i^2*x^3*log(e) - 2*B^2*b^3*c^3*i^2*n*log(d*x + c) + (a*b^
2*d^3*i^2*n - (i^2*n - 6*i^2*log(e))*b^3*c*d^2)*B^2*x^2 + 2*(3*a*b^2*c*d^2*
i^2*n - a^2*b*d^3*i^2*n - (2*i^2*n - 3*i^2*log(e))*b^3*c^2*d)*B^2*x + 2*(3*
a*b^2*c^2*d*i^2*n - 3*a^2*b*c*d^2*i^2*n + a^3*d^3*i^2*n)*B^2*log(b*x + a))*
log((b*x + a)^n) - (2*B^2*b^3*d^3*i^2*x^3*log(e) - 2*B^2*b^3*c^3*i^2*n*log(
d*x + c) + (a*b^2*d^3*i^2*n - (i^2*n - 6*i^2*log(e))*b^3*c*d^2)*B^2*x^2 + 2
*(3*a*b^2*c*d^2*i^2*n - a^2*b*d^3*i^2*n - (2*i^2*n - 3*i^2*log(e))*b^3*c^2*
d)*B^2*x + 2*(3*a*b^2*c^2*d*i^2*n - 3*a^2*b*c*d^2*i^2*n + a^3*d^3*i^2*n)*B^
2*log(b*x + a) + 2*(B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b
^3*c^2*d*i^2*x)*log((b*x + a)^n))*log((d*x + c)^n))/(b^3*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,i+d\,i\,x)^2\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,x)
[Out] int((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)
[Out] Timed out
```

3.172 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ag+bgx}\,dx$

Optimal. Leaf size=572

$$\frac{2Bi^2n(bc-ad)^2\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g}+\frac{di^2(a+bx)(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{b^3g}-\frac{Bdi^2n(a}{}$$

```
[Out] -B*d*(-a*d+b*c)*i^2*n*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^3/g+d*(-a*d
+b*c)*i^2*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^3/g+1/2*i^2*(d*x+c)^2
*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b/g+2*B*(-a*d+b*c)^2*i^2*n*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/b^3/g+B^2*(-a*d+b*c)^2*i^2*n^2*
ln(d*x+c)/b^3/g+B*(-a*d+b*c)^2*i^2*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b
*(d*x+c)/d/(b*x+a))/b^3/g-(-a*d+b*c)^2*i^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^
2*ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g+2*B^2*(-a*d+b*c)^2*i^2*n^2*polylog(2,d*(b
*x+a)/b/(d*x+c))/b^3/g-B^2*(-a*d+b*c)^2*i^2*n^2*polylog(2,b*(d*x+c)/d/(b*x+
a))/b^3/g+2*B*(-a*d+b*c)^2*i^2*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*polylog(2,
b*(d*x+c)/d/(b*x+a))/b^3/g+2*B^2*(-a*d+b*c)^2*i^2*n^2*polylog(3,b*(d*x+c)/d
/(b*x+a))/b^3/g
```

Rubi [B] time = 5.08, antiderivative size = 1790, normalized size of antiderivative = 3.13, number of steps used = 82, number of rules used = 27, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.600, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2440, 2434, 2433, 2375, 2317, 2374, 6589, 2499, 2302, 30, 2396, 2525, 2486, 31}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x
),x]
```

```
[Out] -((A*B*d*(b*c - a*d)*i^2*n*x)/(b^2*g)) - (a*B^2*d*(b*c - a*d)*i^2*n^2*Log[a
 + b*x]^2)/(b^3*g) + (B^2*(b*c - a*d)^2*i^2*n^2*Log[a + b*x]^2)/(2*b^3*g) -
 (A*B*(b*c - a*d)^2*i^2*n*Log[g*(a + b*x)]^2)/(b^3*g) + (B^2*(b*c - a*d)^2*
i^2*n^2*Log[g*(a + b*x)]^3)/(3*b^3*g) - (B^2*(b*c - a*d)^2*i^2*n^2*Log[g*(a
 + b*x)]^2*Log[-c - d*x])/(b^3*g) + (2*B^2*(b*c - a*d)^2*i^2*n*Log[g*(a + b
*x)]*Log[(a + b*x)^n]*Log[-c - d*x])/(b^3*g) - (B^2*(b*c - a*d)^2*i^2*Log[(
a + b*x)^n]^2*Log[-c - d*x])/(b^3*g) - (B^2*d*(b*c - a*d)*i^2*n*(a + b*x)*L
og[e*((a + b*x)/(c + d*x))^n])/(b^3*g) + (2*a*B*d*(b*c - a*d)*i^2*n*Log[a +
 b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^3*g) - (B*(b*c - a*d)^2*i^
2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^3*g) + (d*(b*c
- a*d)*i^2*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^2*g) + (i^2*(c +
d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b*g) + (B^2*(b*c - a*d)
^2*i^2*n^2*Log[c + d*x])/(b^3*g) + (2*B^2*c*(b*c - a*d)*i^2*n^2*Log[-((d*(a
 + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^2*g) - (2*B*c*(b*c - a*d)*i^2*n*(A
+ B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(b^2*g) - (B^2*c*(b*c - a
*d)*i^2*n^2*Log[c + d*x]^2)/(b^2*g) + (2*a*B^2*d*(b*c - a*d)*i^2*n^2*Log[a
+ b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g) - (B^2*(b*c - a*d)^2*i^2*n^2
*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g) + (B^2*(b*c - a*d)^2*
i^2*n^2*Log[g*(a + b*x)]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g) + (B^2*(
b*c - a*d)^2*i^2*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g)
 + (B^2*(b*c - a*d)^2*i^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(
-n)]^2)/(b^3*g) - (B^2*(b*c - a*d)^2*i^2*Log[g*(a + b*x)]*Log[(c + d*x)^(-n
)]^2)/(b^3*g) + ((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2
*Log[a*g + b*g*x])/(b^3*g) + (2*A*B*(b*c - a*d)^2*i^2*n*Log[(b*(c + d*x))/(
b*c - a*d)]*Log[a*g + b*g*x])/(b^3*g) - (2*B^2*(b*c - a*d)^2*i^2*n*Log[(b*(
```

```
c + d*x))/(b*c - a*d)]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] +
 Log[(c + d*x)^(-n)])*Log[a*g + b*g*x])/(b^3*g) - (B^2*(b*c - a*d)^2*i^2*n*
Log[e*((a + b*x)/(c + d*x))^n]*Log[a*g + b*g*x]^2)/(b^3*g) - (B^2*(b*c - a*
d)^2*i^2*n^2*Log[(b*(c + d*x))/(b*c - a*d)]*Log[a*g + b*g*x]^2)/(b^3*g) + (
2*A*B*(b*c - a*d)^2*i^2*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g)
 + (2*a*B^2*d*(b*c - a*d)*i^2*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])
/(b^3*g) - (B^2*(b*c - a*d)^2*i^2*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d
))])/(b^3*g) + (2*B^2*(b*c - a*d)^2*i^2*n*Log[(a + b*x)^n]*PolyLog[2, -((d*
(a + b*x))/(b*c - a*d))])/(b^3*g) - (2*B^2*(b*c - a*d)^2*i^2*n*(Log[(a + b*
x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, -(
(d*(a + b*x))/(b*c - a*d))])/(b^3*g) + (2*B^2*c*(b*c - a*d)*i^2*n^2*PolyLog
[2, (b*(c + d*x))/(b*c - a*d)])/(b^2*g) - (2*B^2*(b*c - a*d)^2*i^2*n*Log[(c
 + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^3*g) - (2*B^2*(b*c
- a*d)^2*i^2*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g) - (2*B^2
*(b*c - a*d)^2*i^2*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/(b^3*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
```

```
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
```

```
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
```

```
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(172c+172dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ag+bgx}\,dx = \int\left(\frac{29584d(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g} + \frac{172d(172c+\right.$$

$$= \frac{\left(29584(bc-ad)^2\right)\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ag+bgx}\,dx}{b^2} + \frac{(172d)\int(172c+}{}$$

$$= \frac{29584d(bc-ad)x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g} + \frac{14792(c+dx)^2}{}$$

$$= \frac{29584d(bc-ad)x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g} + \frac{14792(c+dx)^2}{}$$

$$= \frac{29584d(bc-ad)x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g} + \frac{14792(c+dx)^2}{}$$

$$= \frac{29584d(bc-ad)x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g} + \frac{14792(c+dx)^2}{}$$

$$= -\frac{29584ABd(bc-ad)nx}{b^2g} + \frac{59168aBd(bc-ad)n\log(a+bx)\left(A\right.}{b^3g}$$

$$= -\frac{29584ABd(bc-ad)nx}{b^2g} - \frac{29584B^2d(bc-ad)n(a+bx)\log\left(e\right.}{b^3g}$$

$$= -\frac{29584ABd(bc-ad)nx}{b^2g} - \frac{29584B^2d(bc-ad)n(a+bx)\log\left(e\right.}{b^3g}$$

$$= -\frac{29584ABd(bc-ad)nx}{b^2g} - \frac{29584B^2d(bc-ad)n(a+bx)\log\left(e\right.}{b^3g}$$

$$= -\frac{29584ABd(bc-ad)nx}{b^2g} - \frac{29584aB^2d(bc-ad)n^2\log^2(a+bx}{b^3g}$$

$$= -\frac{29584ABd(bc-ad)nx}{b^2g} - \frac{29584aB^2d(bc-ad)n^2\log^2(a+bx}{b^3g}$$

$$= -\frac{29584ABd(bc-ad)nx}{b^2g} - \frac{29584aB^2d(bc-ad)n^2\log^2(a+bx}{b^3g}$$

$$= -\frac{29584ABd(bc-ad)nx}{b^2g} - \frac{29584aB^2d(bc-ad)n^2\log^2(a+bx}{b^3g}$$

Mathematica [B] time = 3.25, size = 1654, normalized size = 2.89

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g +
 b*g*x),x]
```

```
[Out] (i^2*(6*b*d*(2*b*c - a*d)*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log
[(a + b*x)/(c + d*x)])^2 + 3*b^2*d^2*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))
^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 + 6*(b*c - a*d)^2*Log[a + b*x]*(A + B
*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 - 12*b*B*
c*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(
a*d*Log[a/b + x]^2 - 2*a*d*Log[a/b + x]*(1 + Log[a + b*x]) + 2*(-(b*c) + a*
d + Log[c/d + x]*(b*c + a*d*Log[a + b*x] - a*d*Log[(d*(a + b*x))/(-(b*c) +
a*d)]) + (-(b*d*x) + a*d*Log[a + b*x])*Log[(a + b*x)/(c + d*x)]) - 2*a*d*Po
lyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 6*b^2*B*c^2*n*(A + B*Log[e*((a + b*x
)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(Log[a/b + x]^2 - 2*Log[a +
 b*x]*(Log[a/b + x] - Log[c/d + x] - Log[(a + b*x)/(c + d*x)]) - 2*(Log[c/d
 + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a
*d)])) + 3*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c
 + d*x)])*(-4*a*d^2*(a + b*x)*(-1 + Log[a/b + x]) + 2*a^2*d^2*Log[a/b + x]^
2 + 4*a*b*d*(c + d*x)*(-1 + Log[c/d + x]) + d^2*(b*x*(2*a - b*x) + 2*b^2*x^
2*Log[a/b + x] - 2*a^2*Log[a + b*x]) - 2*d^2*(b*x*(-2*a + b*x) + 2*a^2*Log[
a + b*x])*(Log[a/b + x] - Log[c/d + x] - Log[(a + b*x)/(c + d*x)]) + b^2*(d
*x*(-2*c + d*x) - 2*d^2*x^2*Log[c/d + x] + 2*c^2*Log[c + d*x]) - 4*a^2*d^2*
(Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/
(b*c - a*d)])) + 4*b*B^2*c*n^2*(Log[(a + b*x)/(c + d*x)]*(-(a*d*Log[(a + b*
x)/(c + d*x)]^2) + 6*(b*c - a*d)*Log[(b*c - a*d)/(b*c + b*d*x)] + 3*d*Log[(
a + b*x)/(c + d*x)]*(a + b*x + a*Log[(b*c - a*d)/(b*c + b*d*x)])) + 6*(b*c
- a*d + a*d*Log[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x)
)] - 6*a*d*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))]) - B^2*n^2*(6*b^2*c^2*Lo
g[(b*c - a*d)/(c + d*x)] - 12*a*b*c*d*Log[(b*c - a*d)/(c + d*x)] + 6*a^2*d^
2*Log[(b*c - a*d)/(c + d*x)] + 6*a*b*c*d*Log[(a + b*x)/(c + d*x)] - 6*a^2*d
^2*Log[(a + b*x)/(c + d*x)] + 6*b^2*c*d*x*Log[(a + b*x)/(c + d*x)] - 6*a*b*
d^2*x*Log[(a + b*x)/(c + d*x)] + 9*a^2*d^2*Log[(a + b*x)/(c + d*x)]^2 + 6*a
*b*d^2*x*Log[(a + b*x)/(c + d*x)]^2 - 3*b^2*d^2*x^2*Log[(a + b*x)/(c + d*x)
]^2 - 2*a^2*d^2*Log[(a + b*x)/(c + d*x)]^3 + 6*b^2*c^2*Log[(a + b*x)/(c + d
*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 12*a*b*c*d*Log[(a + b*x)/(c + d*x)]*L
og[(b*c - a*d)/(b*c + b*d*x)] - 18*a^2*d^2*Log[(a + b*x)/(c + d*x)]*Log[(b*
c - a*d)/(b*c + b*d*x)] + 6*a^2*d^2*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a
*d)/(b*c + b*d*x)] + 6*(b^2*c^2 + 2*a*b*c*d - 3*a^2*d^2 + 2*a^2*d^2*Log[(a
+ b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 12*a^2*d^2*Pol
yLog[3, (d*(a + b*x))/(b*(c + d*x))]) - 6*b^2*B^2*c^2*n^2*(Log[(-(b*c) + a*
d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)]^2 - 2*Log[(a + b*x)/(c + d*x)]*P
olyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 2*PolyLog[3, (b*(c + d*x))/(d*(a +
 b*x))]))))/(6*b^3*g)
```

fricas [F] time = 1.07, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2d^2i^2x^2 + 2\,A^2cdi^2x + A^2c^2i^2 + \left(B^2d^2i^2x^2 + 2\,B^2cdi^2x + B^2c^2i^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2 + 2\left(ABd^2i^2x^2 + \right.}{bgx + ag}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, a
lgorithm="fricas")
```

```
[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^
2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*
B*d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^
n))/(b*g*x + a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{bgx+ag}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g),x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,A^2cdi^2\left(\frac{x}{bg}-\frac{a\log\left(bx+a\right)}{b^2g}\right)+\frac{1}{2}\,A^2d^2i^2\left(\frac{2\,a^2\log\left(bx+a\right)}{b^3g}+\frac{bx^2-2\,ax}{b^2g}\right)+\frac{A^2c^2i^2\log\left(bgx+ag\right)}{bg}+\frac{\left(B^2b^2d^2i^2x^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, a
lgorithm="maxima")
```

```
[Out] 2*A^2*c*d*i^2*(x/(b*g) - a*log(b*x + a)/(b^2*g)) + 1/2*A^2*d^2*i^2*(2*a^2*l
og(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A^2*c^2*i^2*log(b*g*x + a*
g)/(b*g) + 1/2*(B^2*b^2*d^2*i^2*x^2 + 2*(2*b^2*c*d*i^2 - a*b*d^2*i^2)*B^2*x
 + 2*(b^2*c^2*i^2 - 2*a*b*c*d*i^2 + a^2*d^2*i^2)*B^2*log(b*x + a))*log((d*x
 + c)^n)^2/(b^3*g) - integrate(-(B^2*b^3*c^3*i^2*log(e)^2 + 2*A*B*b^3*c^3*i
^2*log(e) + (B^2*b^3*d^3*i^2*log(e)^2 + 2*A*B*b^3*d^3*i^2*log(e))*x^3 + 3*(
B^2*b^3*c*d^2*i^2*log(e)^2 + 2*A*B*b^3*c*d^2*i^2*log(e))*x^2 + (B^2*b^3*d^3
*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^
2)*log((b*x + a)^n)^2 + 3*(B^2*b^3*c^2*d*i^2*log(e)^2 + 2*A*B*b^3*c^2*d*i^2
*log(e))*x + 2*(B^2*b^3*c^3*i^2*log(e) + A*B*b^3*c^3*i^2 + (B^2*b^3*d^3*i^2
*log(e) + A*B*b^3*d^3*i^2)*x^3 + 3*(B^2*b^3*c*d^2*i^2*log(e) + A*B*b^3*c*d^
2*i^2)*x^2 + 3*(B^2*b^3*c^2*d*i^2*log(e) + A*B*b^3*c^2*d*i^2)*x)*log((b*x +
 a)^n) - (2*B^2*b^3*c^3*i^2*log(e) + 2*A*B*b^3*c^3*i^2 + (2*A*B*b^3*d^3*i^2
 + (i^2*n + 2*i^2*log(e))*B^2*b^3*d^3)*x^3 + (6*A*B*b^3*c*d^2*i^2 - (a*b^2*
d^3*i^2*n - 2*(2*i^2*n + 3*i^2*log(e))*b^3*c*d^2)*B^2)*x^2 + 2*(3*A*B*b^3*c
^2*d*i^2 + (2*a*b^2*c*d^2*i^2*n - a^2*b*d^3*i^2*n + 3*b^3*c^2*d*i^2*log(e))
*B^2)*x + 2*((b^3*c^2*d*i^2*n - 2*a*b^2*c*d^2*i^2*n + a^2*b*d^3*i^2*n)*B^2*
x + (a*b^2*c^2*d*i^2*n - 2*a^2*b*c*d^2*i^2*n + a^3*d^3*i^2*n)*B^2)*log(b*x
+ a) + 2*(B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i
^2*x + B^2*b^3*c^3*i^2)*log((b*x + a)^n))*log((d*x + c)^n))/(b^4*d*g*x^2 +
a*b^3*c*g + (b^4*c*g + a*b^3*d*g)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2}{a\,g+b\,g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
),x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g),x)
```

```
[Out] Timed out
```

3.173 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=472

$$\frac{d^2i^2(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{b^3g^2}+\frac{4Bdi^2n(bc-ad)\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g^2}+\frac{2Bdi^2n(bc-ad)\text{lo}}{}$$

```
[Out] -2*B^2*(-a*d+b*c)*i^2*n^2*(d*x+c)/b^2/g^2/(b*x+a)-2*B*(-a*d+b*c)*i^2*n*(d*x
+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^2/(b*x+a)+d^2*i^2*(b*x+a)*(A+B*ln
(e*((b*x+a)/(d*x+c))^n))^2/b^3/g^2-(-a*d+b*c)*i^2*(d*x+c)*(A+B*ln(e*((b*x+a
)/(d*x+c))^n))^2/b^2/g^2/(b*x+a)+2*B*d*(-a*d+b*c)*i^2*n*(A+B*ln(e*((b*x+a)/
(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/b^3/g^2-2*d*(-a*d+b*c)*i^2*(A+B*ln(e*
((b*x+a)/(d*x+c))^n))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^2+2*B^2*d*(-a*d+b*c
)*i^2*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^3/g^2+4*B*d*(-a*d+b*c)*i^2*n*(A+
B*ln(e*((b*x+a)/(d*x+c))^n))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^3/g^2+4*B^2*d
*(-a*d+b*c)*i^2*n^2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^3/g^2
```

Rubi [B] time = 3.76, antiderivative size = 1309, normalized size of antiderivative = 2.77, number of steps used = 60, number of rules used = 21, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.467, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$-\frac{aB^2d^2n^2\log^2(a+bx)i^2}{b^3g^2}+\frac{B^2d(bc-ad)n^2\log^2(a+bx)i^2}{b^3g^2}-\frac{2ABd(bc-ad)n\log^2(a+bx)i^2}{b^3g^2}-\frac{2B^2d(bc-ad)\log\left(-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x
)^2,x]
```

```
[Out] (-2*B^2*(b*c - a*d)^2*i^2*n^2)/(b^3*g^2*(a + b*x)) - (2*B^2*d*(b*c - a*d)*i
^2*n^2*Log[a + b*x])/(b^3*g^2) - (2*A*B*d*(b*c - a*d)*i^2*n*Log[a + b*x]^2)
/(b^3*g^2) - (a*B^2*d^2*i^2*n^2*Log[a + b*x]^2)/(b^3*g^2) + (B^2*d*(b*c - a
*d)*i^2*n^2*Log[a + b*x]^2)/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*Log[-((b*c
 - a*d)/(d*(a + b*x)))]*Log[e*((a + b*x)/(c + d*x))^n]^2)/(b^3*g^2) - (2*B^
2*d*(b*c - a*d)*i^2*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/(b^3*g^2
) - (2*B*(b*c - a*d)^2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^3*g
^2*(a + b*x)) + (2*a*B*d^2*i^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c +
d*x))^n]))/(b^3*g^2) - (2*B*d*(b*c - a*d)*i^2*n*Log[a + b*x]*(A + B*Log[e*(
(a + b*x)/(c + d*x))^n]))/(b^3*g^2) + (d^2*i^2*x*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])^2)/(b^2*g^2) - ((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c +
 d*x))^n])^2)/(b^3*g^2*(a + b*x)) + (2*d*(b*c - a*d)*i^2*Log[a + b*x]*(A +
B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^3*g^2) + (2*B^2*d*(b*c - a*d)*i^2*n
^2*Log[c + d*x])/(b^3*g^2) + (2*B^2*c*d*i^2*n^2*Log[-((d*(a + b*x))/(b*c -
a*d))]*Log[c + d*x])/(b^2*g^2) - (2*B^2*d*(b*c - a*d)*i^2*n^2*Log[-((d*(a +
 b*x))/(b*c - a*d))]*Log[c + d*x])/(b^3*g^2) - (2*B*c*d*i^2*n*(A + B*Log[e*
((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(b^2*g^2) + (2*B*d*(b*c - a*d)*i^2*
n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(b^3*g^2) - (B^2*c*d
*i^2*n^2*Log[c + d*x]^2)/(b^2*g^2) + (B^2*d*(b*c - a*d)*i^2*n^2*Log[c + d*x
]^2)/(b^3*g^2) + (4*A*B*d*(b*c - a*d)*i^2*n*Log[a + b*x]*Log[(b*(c + d*x))/
(b*c - a*d)])/(b^3*g^2) + (2*a*B^2*d^2*i^2*n^2*Log[a + b*x]*Log[(b*(c + d*x
))/(b*c - a*d)])/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*n^2*Log[a + b*x]*Log[
(b*(c + d*x))/(b*c - a*d)])/(b^3*g^2) + (4*A*B*d*(b*c - a*d)*i^2*n*PolyLog[
2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g^2) + (2*a*B^2*d^2*i^2*n^2*PolyLog[
```

```
2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g^2) - (2*B^2*d*(b*c - a*d)*i^2*n^2*
PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^3*g^2) + (2*B^2*c*d*i^2*n^2*Po
lyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^2*g^2) - (2*B^2*d*(b*c - a*d)*i^2*n
^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^3*g^2) + (4*B^2*d*(b*c - a*d)*
i^2*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x
))])/(b^3*g^2) + (4*B^2*d*(b*c - a*d)*i^2*n^2*PolyLog[3, 1 + (b*c - a*d)/(d
*(a + b*x))])/(b^3*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(173c+173dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2}\,dx = \int\left(\frac{29929d^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^2} + \frac{29929(bc-ad)^2\left(A\ \cdots\right.}{b^2g^2(a\ \cdots}\right.$$

$$= \frac{\left(29929d^2\right)\int\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2dx}{b^2g^2} + \frac{(59858d(bc-ad)\ \cdots}{}$$

$$= \frac{29929d^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^2} - \frac{29929(bc-ad)^2\left(A+B\ \cdots\right.}{b^3g^2(a+\ \cdots}$$

$$= \frac{29929d^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^2} - \frac{29929(bc-ad)^2\left(A+B\ \cdots\right.}{b^3g^2(a+\ \cdots}$$

$$= \frac{29929d^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^2} - \frac{29929(bc-ad)^2\left(A+B\ \cdots\right.}{b^3g^2(a+\ \cdots}$$

$$= \frac{29929d^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^2} - \frac{29929(bc-ad)^2\left(A+B\ \cdots\right.}{b^3g^2(a+\ \cdots}$$

$$= -\frac{59858B(bc-ad)^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^3g^2(a+bx)} + \frac{59858aBd^2n\,\mathrm{l}\ \cdots}{}$$

$$= -\frac{59858B^2d(bc-ad)\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^3g^2} - \frac{59858B(b\ \cdots}{}$$

$$= -\frac{59858B^2d(bc-ad)\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^3g^2} - \frac{59858B\ \cdots}{}$$

$$= -\frac{59858B^2(bc-ad)^2n^2}{b^3g^2(a+bx)} - \frac{59858B^2d(bc-ad)n^2\log(a+bx)}{b^3g^2} - \cdots$$

$$= -\frac{59858B^2(bc-ad)^2n^2}{b^3g^2(a+bx)} - \frac{59858B^2d(bc-ad)n^2\log(a+bx)}{b^3g^2} - \cdots$$

$$= -\frac{59858B^2(bc-ad)^2n^2}{b^3g^2(a+bx)} - \frac{59858B^2d(bc-ad)n^2\log(a+bx)}{b^3g^2} - \cdots$$

Mathematica [B] time = 12.40, size = 2834, normalized size = 6.00

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g +
 b*g*x)^2,x]

[Out] (i^2*(3*b*d^2*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(
c + d*x)])^2 - (3*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n
*Log[(a + b*x)/(c + d*x)])^2)/(a + b*x) + 6*d*(b*c - a*d)*Log[a + b*x]*(A +
 B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 + (6*b^
2*B*c^2*n*(-A - B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(a + b*x)/(c + d
*x)])*(-(d*(a + b*x)*Log[c/d + x]) + d*(a + b*x)*Log[(d*(a + b*x))/(-(b*c)
+ a*d)] + (b*c - a*d)*(1 + Log[(a + b*x)/(c + d*x)])))/((b*c - a*d)*(a + b*
x)) + (3*b^2*B^2*c^2*n^2*(-2*b*c + 2*a*d - 2*d*(a + b*x)*Log[a + b*x] - 2*(
b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*d*(a + b*x)*Log[a + b*x]*Log[(a + b
*x)/(c + d*x)] - (b*c - a*d)*Log[(a + b*x)/(c + d*x)]^2 + 2*d*(a + b*x)*Log
[c + d*x] - 2*d*(a + b*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b
*d*x)] + d*(a + b*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c
 - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + d*(a + b*x)*(Log[
(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c
- a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c -
 a*d)*(a + b*x)) + 6*b*B*c*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*
Log[(a + b*x)/(c + d*x)])*(Log[a/b + x]^2 - 2*Log[a/b + x]*Log[a + b*x] - 2
*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 2*Log[a + b*x]*((a*d)/(b*
c - a*d) + Log[c/d + x] + Log[(a + b*x)/(c + d*x)]) + 2*a*((a + b*x)^(-1) +
 Log[(a + b*x)/(c + d*x)]/(a + b*x) + (d*Log[c + d*x])/(-(b*c) + a*d)) - 2*
PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 6*B*d^2*n*(A + B*Log[e*((a + b*x)/
(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*((a + b*x)*(-1 + Log[a/b + x]
) - a*Log[a/b + x]^2 - (a^2*(1 + Log[a/b + x]))/(a + b*x) - b*(c/d + x)*(-1
 + Log[c/d + x]) + (a^2*Log[c/d + x])/(a + b*x) + (b*x - a^2/(a + b*x) - 2*
a*Log[a + b*x])*(-Log[a/b + x] + Log[c/d + x] + Log[(a + b*x)/(c + d*x)]) +
 (a^2*d*(Log[a + b*x] - Log[c + d*x]))/(-(b*c) + a*d) + 2*a*(Log[c/d + x]*L
og[(d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))
+ (2*b*B^2*c*d*n^2*(6*b*c - 6*a*d - (6*b^2*c*x)/(a + b*x) + (6*a*b*d*x)/(a
+ b*x) + 6*a*d*Log[a/b + x] + 3*b*c*Log[a/b + x]^2 - 3*a*d*Log[a/b + x]^2 -
 6*b*c*Log[c/d + x] + 6*b*c*Log[a + b*x] - 6*a*d*Log[a + b*x] - 6*b*c*Log[a
/b + x]*Log[a + b*x] + 6*a*d*Log[a/b + x]*Log[a + b*x] + 6*b*c*Log[c/d + x]
*Log[a + b*x] - 6*a*d*Log[c/d + x]*Log[a + b*x] - 6*b*c*Log[c/d + x]*Log[(d
*(a + b*x))/(-(b*c) + a*d)] + 6*a*d*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c)
+ a*d)] - (6*b*(b*c - a*d)*x*Log[(a + b*x)/(c + d*x)])/(a + b*x) + 6*b*c*Lo
g[a + b*x]*Log[(a + b*x)/(c + d*x)] - 6*a*d*Log[a + b*x]*Log[(a + b*x)/(c +
 d*x)] + 3*a*d*Log[(a + b*x)/(c + d*x)]^2 + 3*b*d*x*Log[(a + b*x)/(c + d*x)
]^2 - (3*b^2*x*(c + d*x)*Log[(a + b*x)/(c + d*x)]^2)/(a + b*x) - 3*b*c*Log[
(-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)]^2 - a*d*Log[(a + b*x
)/(c + d*x)]^3 + 6*b*c*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*
x)] - 6*a*d*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 3*a*d
*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*(b*c - a*d +
 a*d*Log[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 6*
(b*c - a*d)*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 6*b*c*Log[(a + b*x)/(c
+ d*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 6*a*d*PolyLog[3, (d*(a +
b*x))/(b*(c + d*x))] + 6*b*c*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))]))/(b*c
 - a*d) - (B^2*d*n^2*(6*a^2*b*c*d + 6*a^2*b*d^2*x + 6*a^2*b*c*d*Log[(a + b*
x)/(c + d*x)] + 6*a^2*b*d^2*x*Log[(a + b*x)/(c + d*x)] + 12*a^2*b*c*d*Log[(
-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)] + 12*a*b^2*c*d*x*Log[
(-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)] + 6*a^2*b*c*d*Log[(a
 + b*x)/(c + d*x)]^2 + 3*a^3*d^2*Log[(a + b*x)/(c + d*x)]^2 + 9*a^2*b*d^2*x
*Log[(a + b*x)/(c + d*x)]^2 - 3*b^3*c*d*x^2*Log[(a + b*x)/(c + d*x)]^2 + 3*
a*b^2*d^2*x^2*Log[(a + b*x)/(c + d*x)]^2 - 6*a^2*b*c*d*Log[(-(b*c) + a*d)/(
d*(a + b*x))]*Log[(a + b*x)/(c + d*x)]^2 - 6*a*b^2*c*d*x*Log[(-(b*c) + a*d)
/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)]^2 - 2*a^3*d^2*Log[(a + b*x)/(c + d
*x)]^3 - 2*a^2*b*d^2*x*Log[(a + b*x)/(c + d*x)]^3 - 6*a*b^2*c^2*Log[(a + b*
x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 6*a^3*d^2*Log[(a + b*x)/(c +
 d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 6*b^3*c^2*x*Log[(a + b*x)/(c + d*x)
```

```
]*Log[(b*c - a*d)/(b*c + b*d*x)] - 6*a^2*b*d^2*x*Log[(a + b*x)/(c + d*x)]*L
og[(b*c - a*d)/(b*c + b*d*x)] + 6*a^3*d^2*Log[(a + b*x)/(c + d*x)]^2*Log[(b
*c - a*d)/(b*c + b*d*x)] + 6*a^2*b*d^2*x*Log[(a + b*x)/(c + d*x)]^2*Log[(b*
c - a*d)/(b*c + b*d*x)] + 6*(a + b*x)*(-(b^2*c^2) - a^2*d^2 + 2*a^2*d^2*Log
[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + 12*a*b*c*d
*(a + b*x)*(-1 + Log[(a + b*x)/(c + d*x)])*PolyLog[2, (b*(c + d*x))/(d*(a +
 b*x))] - 12*a^3*d^2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] - 12*a^2*b*d^2
*x*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] + 12*a^2*b*c*d*PolyLog[3, (b*(c
+ d*x))/(d*(a + b*x))] + 12*a*b^2*c*d*x*PolyLog[3, (b*(c + d*x))/(d*(a + b*
x))]))/((b*c - a*d)*(a + b*x))))/(3*b^3*g^2)
```

fricas [F] time = 1.12, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2d^2i^2x^2 + 2\,A^2cdi^2x + A^2c^2i^2 + \left(B^2d^2i^2x^2 + 2\,B^2cdi^2x + B^2c^2i^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2 + 2\left(ABd^2i^2x^2 + 2\,A\right.}{b^2g^2x^2 + 2\,abg^2x + a^2g^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x,
 algorithm="fricas")
```

```
[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^
2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*
B*d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^
n))/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^2\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{\left(bgx+ag\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x,
 algorithm="maxima")
```

```
[Out] -2*A*B*c^2*i^2*n*(1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)
*g^2) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2)) - A^2*(a^2/(b^4*g^2*x + a*b^3
```

```
*g^2) - x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g^2))*d^2*i^2 + 2*A^2*c*d*i^2*(
a/(b^3*g^2*x + a*b^2*g^2) + log(b*x + a)/(b^2*g^2)) - 2*A*B*c^2*i^2*log(e*(
b*x/(d*x + c) + a/(d*x + c))^n)/(b^2*g^2*x + a*b*g^2) - A^2*c^2*i^2/(b^2*g^
2*x + a*b*g^2) + (B^2*b^2*d^2*i^2*x^2 + B^2*a*b*d^2*i^2*x - (b^2*c^2*i^2 -
2*a*b*c*d*i^2 + a^2*d^2*i^2)*B^2 + 2*((b^2*c*d*i^2 - a*b*d^2*i^2)*B^2*x + (
a*b*c*d*i^2 - a^2*d^2*i^2)*B^2)*log(b*x + a))*log((d*x + c)^n)^2/(b^4*g^2*x
 + a*b^3*g^2) - integrate(-(B^2*b^3*c^3*i^2*log(e)^2 + (B^2*b^3*d^3*i^2*log
(e)^2 + 2*A*B*b^3*d^3*i^2*log(e))*x^3 + 3*(B^2*b^3*c*d^2*i^2*log(e)^2 + 2*A
*B*b^3*c*d^2*i^2*log(e))*x^2 + (B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x
^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*log((b*x + a)^n)^2 + (3*B^2*b
^3*c^2*d*i^2*log(e)^2 + 4*A*B*b^3*c^2*d*i^2*log(e))*x + 2*(B^2*b^3*c^3*i^2*
log(e) + (B^2*b^3*d^3*i^2*log(e) + A*B*b^3*d^3*i^2)*x^3 + 3*(B^2*b^3*c*d^2*
i^2*log(e) + A*B*b^3*c*d^2*i^2)*x^2 + (3*B^2*b^3*c^2*d*i^2*log(e) + 2*A*B*b
^3*c^2*d*i^2)*x)*log((b*x + a)^n) - 2*((A*B*b^3*d^3*i^2 + (i^2*n + i^2*log(
e))*B^2*b^3*d^3)*x^3 - (a*b^2*c^2*d*i^2*n - 2*a^2*b*c*d^2*i^2*n + a^3*d^3*i
^2*n - b^3*c^3*i^2*log(e))*B^2 + (3*A*B*b^3*c*d^2*i^2 + (2*a*b^2*d^3*i^2*n
+ 3*b^3*c*d^2*i^2*log(e))*B^2)*x^2 + (2*A*B*b^3*c^2*d*i^2 + (2*a*b^2*c*d^2*
i^2*n - (i^2*n - 3*i^2*log(e))*b^3*c^2*d)*B^2)*x + 2*((b^3*c*d^2*i^2*n - a*
b^2*d^3*i^2*n)*B^2*x^2 + 2*(a*b^2*c*d^2*i^2*n - a^2*b*d^3*i^2*n)*B^2*x + (a
^2*b*c*d^2*i^2*n - a^3*d^3*i^2*n)*B^2)*log(b*x + a) + (B^2*b^3*d^3*i^2*x^3
+ 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*log((b
*x + a)^n))*log((d*x + c)^n))/(b^5*d*g^2*x^3 + a^2*b^3*c*g^2 + (b^5*c*g^2 +
 2*a*b^4*d*g^2)*x^2 + (2*a*b^4*c*g^2 + a^2*b^3*d*g^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^2\left(A+B\,\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2}{\left(a\,g+b\,g\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^2,x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**2
,x)
```

```
[Out] Timed out
```

3.174 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3}\,dx$

Optimal. Leaf size=417

$$\frac{2Bd^2i^2n\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^3g^3}-\frac{d^2i^2\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{b^3g^3}-\frac{di^2(c+dx)\left(B\log\right.}{b^2g^3(a}$$

```
[Out] -2*B^2*d*i^2*n^2*(d*x+c)/b^2/g^3/(b*x+a)-1/4*B^2*i^2*n^2*(d*x+c)^2/b/g^3/(b
*x+a)^2-2*B*d*i^2*n*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^3/(b*x+a)
-1/2*B*i^2*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b/g^3/(b*x+a)^2-d*i^
2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^2/g^3/(b*x+a)-1/2*i^2*(d*x+c)
^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b/g^3/(b*x+a)^2-d^2*i^2*(A+B*ln(e*((b*
x+a)/(d*x+c))^n))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^3/g^3+2*B*d^2*i^2*n*(A+B*ln
(e*((b*x+a)/(d*x+c))^n))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^3/g^3+2*B^2*d^2*i
^2*n^2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^3/g^3
```

Rubi [B] time = 3.84, antiderivative size = 1003, normalized size of antiderivative = 2.41, number of steps used = 68, number of rules used = 20, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{3B^2d^2n^2\log^2(a+bx)i^2}{2b^3g^3}-\frac{ABd^2n\log^2(a+bx)i^2}{b^3g^3}-\frac{B^2d^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)i^2}{b^3g^3}-\frac{B^2d^2\log(a+bx)\log^2\left(e\right.}{b^3g^3}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x
)^3,x]
```

```
[Out] -(B^2*(b*c - a*d)^2*i^2*n^2)/(4*b^3*g^3*(a + b*x)^2) - (5*B^2*d*(b*c - a*d)
*i^2*n^2)/(2*b^3*g^3*(a + b*x)) - (5*B^2*d^2*i^2*n^2*Log[a + b*x])/(2*b^3*g
^3) - (A*B*d^2*i^2*n*Log[a + b*x]^2)/(b^3*g^3) + (3*B^2*d^2*i^2*n^2*Log[a +
 b*x]^2)/(2*b^3*g^3) - (B^2*d^2*i^2*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e
*((a + b*x)/(c + d*x))^n]^2)/(b^3*g^3) - (B^2*d^2*i^2*Log[a + b*x]*Log[e*((
a + b*x)/(c + d*x))^n]^2)/(b^3*g^3) - (B*(b*c - a*d)^2*i^2*n*(A + B*Log[e*(
(a + b*x)/(c + d*x))^n]))/(2*b^3*g^3*(a + b*x)^2) - (3*B*d*(b*c - a*d)*i^2*
n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^3*(a + b*x)) - (3*B*d^2*i^
2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^3*g^3) - ((b*c
- a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^3*g^3*(a + b*x)
^2) - (2*d*(b*c - a*d)*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^3*g
^3*(a + b*x)) + (d^2*i^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
)^2)/(b^3*g^3) + (5*B^2*d^2*i^2*n^2*Log[c + d*x])/(2*b^3*g^3) - (3*B^2*d^2*
i^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^3*g^3) + (3*B*d^
2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(b^3*g^3) + (3
*B^2*d^2*i^2*n^2*Log[c + d*x]^2)/(2*b^3*g^3) + (2*A*B*d^2*i^2*n*Log[a + b*x
]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g^3) - (3*B^2*d^2*i^2*n^2*Log[a + b*
x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^3*g^3) + (2*A*B*d^2*i^2*n*PolyLog[2,
-((d*(a + b*x))/(b*c - a*d))])/(b^3*g^3) - (3*B^2*d^2*i^2*n^2*PolyLog[2, -(
(d*(a + b*x))/(b*c - a*d))])/(b^3*g^3) - (3*B^2*d^2*i^2*n^2*PolyLog[2, (b*(
c + d*x))/(b*c - a*d)])/(b^3*g^3) + (2*B^2*d^2*i^2*n*Log[e*((a + b*x)/(c +
d*x))^n]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^3*g^3) + (2*B^2*d^2*
i^2*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^3*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
```

```
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(174c+174dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3}\,dx = \int \left(\frac{30276(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^3(a+bx)^3} + \frac{60552d(bc-}{}\right.$$

$$= \frac{\left(30276d^2\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}\,dx}{b^2g^3} + \frac{(60552d(bc-ad))\int \frac{(A+}{}}{b^2g^3}$$

$$= -\frac{15138(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^3(a+bx)^2} - \frac{60552d(bc-ad}{b}$$

$$= -\frac{15138(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^3(a+bx)^2} - \frac{60552d(bc-ad}{b}$$

$$= -\frac{15138(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^3(a+bx)^2} - \frac{60552d(bc-ad}{b}$$

$$= -\frac{15138(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^3(a+bx)^2} - \frac{60552d(bc-ad}{b}$$

$$= -\frac{15138B(bc-ad)^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^3g^3(a+bx)^2} - \frac{90828Bd(bc-}{}$$

$$= -\frac{30276B^2d^2\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^3g^3} - \frac{15138B(bc-ad)^2}{b^3g}$$

$$= -\frac{30276B^2d^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^3g^3} - \frac{30276B^2d^2\log}{}$$

$$= -\frac{7569B^2(bc-ad)^2n^2}{b^3g^3(a+bx)^2} - \frac{75690B^2d(bc-ad)n^2}{b^3g^3(a+bx)} - \frac{75690B^2d^2n^2}{b^3}$$

$$= -\frac{7569B^2(bc-ad)^2n^2}{b^3g^3(a+bx)^2} - \frac{75690B^2d(bc-ad)n^2}{b^3g^3(a+bx)} - \frac{75690B^2d^2n^2}{b^3}$$

$$= -\frac{7569B^2(bc-ad)^2n^2}{b^3g^3(a+bx)^2} - \frac{75690B^2d(bc-ad)n^2}{b^3g^3(a+bx)} - \frac{75690B^2d^2n^2}{b^3}$$

Mathematica [B] time = 13.70, size = 4761, normalized size = 11.42

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g +
 b*g*x)^3,x]
```

```
[Out] (d^2*i^2*Log[a + b*x]*(A + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b
*x)/(c + d*x)]))^2)/(b^3*g^3) + (2*(-(A^2*b*c*d*i^2) + a*A^2*d^2*i^2 - 2*A*
b*B*c*d*i^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) +
 2*a*A*B*d^2*i^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x
)]) - b*B^2*c*d*i^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c +
d*x)])^2 + a*B^2*d^2*i^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/
(c + d*x)])^2))/(b^3*g^3*(a + b*x)) + (-(A^2*b^2*c^2*i^2) + 2*a*A^2*b*c*d*i
^2 - a^2*A^2*d^2*i^2 - 2*A*b^2*B*c^2*i^2*(Log[e*((a + b*x)/(c + d*x))^n] -
n*Log[(a + b*x)/(c + d*x)]) + 4*a*A*b*B*c*d*i^2*(Log[e*((a + b*x)/(c + d*x)
)^n] - n*Log[(a + b*x)/(c + d*x)]) - 2*a^2*A*B*d^2*i^2*(Log[e*((a + b*x)/(c
 + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) - b^2*B^2*c^2*i^2*(Log[e*((a + b*
x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2 + 2*a*b*B^2*c*d*i^2*(Log[e
*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2 - a^2*B^2*d^2*i^2
*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)/(2*b^3*g^
3*(a + b*x)^2) + (2*B*c^2*i^2*n*(A + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*
Log[(a + b*x)/(c + d*x)]))*(-1/8*((a/b + x)*(2*Log[a/b + x] + 4*Log[a/b + x
]^2))/((a + b*x)^3*Log[a/b + x]) - ((b*(c/d + x))/((-a + (b*c)/d)^3*(1 - (b
*(c/d + x))/(-a + (b*c)/d))) - ((b^2*(c/d + x)^2)/((-a + (b*c)/d)^4*(1 - (b
*(c/d + x))/(-a + (b*c)/d))^2) + (2*b*(c/d + x))/((-a + (b*c)/d)^3*(1 - (b*
(c/d + x))/(-a + (b*c)/d))))*Log[c/d + x] - Log[1 - (b*(c/d + x))/(-a + (b*
c)/d)]/(-a + (b*c)/d)^2)/(2*b) - (-Log[a/b + x] + Log[c/d + x] + Log[a/(c +
 d*x) + (b*x)/(c + d*x)])/(2*b*(a + b*x)^2)))/g^3 + (4*B*c*d*i^2*n*(A + B*(
Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]))*(-((1 + Log[a
/b + x])/(b^2*(a + b*x))) + (a*(1 + 2*Log[a/b + x]))/(4*b^2*(a + b*x)^2) -
(-(Log[c/d + x]/(b*(a + b*x))) + (d*(Log[a + b*x]/(b*c - a*d) - Log[c + d*x
]/(b*c - a*d)))/b)/b - (a*(Log[c/d + x] + (d*(a + b*x)*(b*c - a*d + d*(a +
b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]))/(b*c - a*d)^2))/(2*b^2*(a +
b*x)^2) - ((a + 2*b*x)*(-Log[a/b + x] + Log[c/d + x] + Log[a/(c + d*x) + (b
*x)/(c + d*x)]))/(2*b^2*(a + b*x)^2)))/g^3 + (2*B*d^2*i^2*n*(A + B*(Log[e*(
(a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]))*(Log[a/b + x]^2/(2*b
^3) + (2*a*(1 + Log[a/b + x]))/(b^3*(a + b*x)) - (a^2*(1 + 2*Log[a/b + x]))
/(4*b^3*(a + b*x)^2) + (2*a*(-(Log[c/d + x]/(b*(a + b*x))) + (d*(Log[a + b*
x]/(b*c - a*d) - Log[c + d*x]/(b*c - a*d)))/b))/b^2 + (a^2*(Log[c/d + x] +
(d*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*
x]))/(b*c - a*d)^2))/(2*b^3*(a + b*x)^2) + (((a*(3*a + 4*b*x))/(a + b*x)^2
+ 2*Log[a + b*x])*(-Log[a/b + x] + Log[c/d + x] + Log[a/(c + d*x) + (b*x)/(
c + d*x)]))/(2*b^3) - ((Log[c/d + x]*Log[(a + b*x)/(a - (b*c)/d)])/b + Poly
Log[2, (b*d*(c/d + x))/(b*c - a*d)]/b)/b^2))/g^3 + (B^2*c*d*i^2*n^2*(2*a*Lo
g[(a + b*x)/(c + d*x)]^2 - 4*(a + b*x)*Log[(a + b*x)/(c + d*x)]^2 - (4*(a +
 b*x)*(2*b*c - 2*a*d + 2*d*(a + b*x)*Log[a + b*x] + 2*(b*c - a*d)*Log[(a +
b*x)/(c + d*x)] + 2*d*(a + b*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 2*d
*(a + b*x)*Log[c + d*x] + 2*d*(a + b*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c -
 a*d)/(b*c + b*d*x)] - d*(a + b*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(
c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - d*(
a + b*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d
)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*
d)])))/(b*c - a*d) + (a*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d
^2*(a + b*x)^2*Log[a + b*x] + 2*(b*c - a*d)^2*Log[(a + b*x)/(c + d*x)] + 4*
d*(-(b*c) + a*d)*(a + b*x)*Log[(a + b*x)/(c + d*x)] - 4*d^2*(a + b*x)^2*Log
[a + b*x]*Log[(a + b*x)/(c + d*x)] + 2*d^2*(a + b*x)^2*Log[c + d*x] - 4*d*(
a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x])
- 4*d^2*(a + b*x)^2*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)]
 + 2*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c
 - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*d^2*(a + b*x)^2
*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log
[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(
b*c - a*d)^2))/(2*b^2*g^3*(a + b*x)^2) - (B^2*c^2*i^2*n^2*((b*c - a*d)^2 +
```

```
2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*(b*c - a*
d)^2*Log[(a + b*x)/(c + d*x)] + 4*d*(-(b*c) + a*d)*(a + b*x)*Log[(a + b*x)/
(c + d*x)] - 4*d^2*(a + b*x)^2*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] + 2*(b
*c - a*d)^2*Log[(a + b*x)/(c + d*x)]^2 + 2*d^2*(a + b*x)^2*Log[c + d*x] - 4
*d*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*
x]) - 4*d^2*(a + b*x)^2*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d
*x)] + 2*d^2*(a + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/
(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*d^2*(a + b*
x)^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] +
 Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])
))/(4*b*(b*c - a*d)^2*g^3*(a + b*x)^2) - (B^2*d^2*i^2*n^2*((2*x*(7*b^2*c^2
- 14*a*b*c*d + 7*a^2*d^2 - 6*d*(a + b*x)*(a*d - b*(2*c + d*x))*Log[a + b*x]
 + 6*(b*c - a*d)^2*Log[(a + b*x)/(c + d*x)] + 2*b^2*(c + d*x)^2*Log[(a + b*
x)/(c + d*x)]^2 - 12*a*b*c*d*Log[c + d*x] + 6*a^2*d^2*Log[c + d*x] - 12*b^2
*c*d*x*Log[c + d*x] - 6*b^2*d^2*x^2*Log[c + d*x]))/(a + b*x) + (b*x^2*(b^2*
c^2 - 8*a*b*c*d + 7*a^2*d^2 - 6*b^2*c*d*x + 6*a*b*d^2*x - 6*d^2*(a + b*x)^2
*Log[a + b*x] + 2*(b*c - a*d)*(b*c - 3*a*d - 2*b*d*x)*Log[(a + b*x)/(c + d*
x)] + 2*b*(c + d*x)*(b*c - 2*a*d - b*d*x)*Log[(a + b*x)/(c + d*x)]^2 + 6*a^
2*d^2*Log[c + d*x] + 12*a*b*d^2*x*Log[c + d*x] + 6*b^2*d^2*x^2*Log[c + d*x]
))/(a + b*x)^2 - 2*(12*b*c^2 - 18*a*c*d + (6*a^2*d^2)/b - 3*b*c*d*x + 3*a*d
^2*x + 12*a*c*d*Log[a/b + x] - (6*a^2*d^2*Log[a/b + x])/b + 3*b*c^2*Log[a/b
 + x]^2 - 6*a*c*d*Log[a/b + x]^2 + (3*a^2*d^2*Log[a/b + x]^2)/b - 12*b*c^2*
Log[c/d + x] + 6*a*c*d*Log[c/d + x] + 7*b*c^2*Log[a + b*x] - 14*a*c*d*Log[a
 + b*x] + (4*a^2*d^2*Log[a + b*x])/b + 12*b*c*d*x*Log[a + b*x] - 6*a*d^2*x*
Log[a + b*x] + 3*b*d^2*x^2*Log[a + b*x] - 6*b*c^2*Log[a/b + x]*Log[a + b*x]
 + 12*a*c*d*Log[a/b + x]*Log[a + b*x] - (6*a^2*d^2*Log[a/b + x]*Log[a + b*x
])/b + 6*b*c^2*Log[c/d + x]*Log[a + b*x] - 12*a*c*d*Log[c/d + x]*Log[a + b*
x] + (6*a^2*d^2*Log[c/d + x]*Log[a + b*x])/b - 6*b*c^2*Log[c/d + x]*Log[(d*
(a + b*x))/(-(b*c) + a*d)] + 12*a*c*d*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c
) + a*d)] - (6*a^2*d^2*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)])/b -
2*b*c^2*Log[(b*c - a*d)/(c + d*x)] + 4*a*c*d*Log[(b*c - a*d)/(c + d*x)] - (
2*a^2*d^2*Log[(b*c - a*d)/(c + d*x)])/b - 2*a*c*d*Log[(a + b*x)/(c + d*x)]
+ (2*a^2*d^2*Log[(a + b*x)/(c + d*x)])/b - 2*b*c*d*x*Log[(a + b*x)/(c + d*x
)] + 2*a*d^2*x*Log[(a + b*x)/(c + d*x)] + 6*b*c^2*Log[a + b*x]*Log[(a + b*x
)/(c + d*x)] - 12*a*c*d*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] + (6*a^2*d^2*
Log[a + b*x]*Log[(a + b*x)/(c + d*x)])/b + 4*a*c*d*Log[(a + b*x)/(c + d*x)]
^2 - (3*a^2*d^2*Log[(a + b*x)/(c + d*x)]^2)/b + 4*b*c*d*x*Log[(a + b*x)/(c
+ d*x)]^2 - 2*a*d^2*x*Log[(a + b*x)/(c + d*x)]^2 + b*d^2*x^2*Log[(a + b*x)/
(c + d*x)]^2 - 2*b*c^2*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c +
 d*x)]^2 - (4*a*c*d*Log[(a + b*x)/(c + d*x)]^3)/3 + (2*a^2*d^2*Log[(a + b*x
)/(c + d*x)]^3)/(3*b) + 3*b*c^2*Log[c + d*x] - 12*b*c*d*x*Log[c + d*x] + 6*
a*d^2*x*Log[c + d*x] - 3*b*d^2*x^2*Log[c + d*x] + 6*b*c^2*Log[(a + b*x)/(c
+ d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 12*a*c*d*Log[(a + b*x)/(c + d*x)]*
Log[(b*c - a*d)/(b*c + b*d*x)] + (6*a^2*d^2*Log[(a + b*x)/(c + d*x)]*Log[(b
*c - a*d)/(b*c + b*d*x)])/b + 4*a*c*d*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c -
 a*d)/(b*c + b*d*x)] - (2*a^2*d^2*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d
)/(b*c + b*d*x)])/b + (2*(3*(b*c - a*d)^2 - 2*a*d*(-2*b*c + a*d)*Log[(a + b
*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))])/b - (6*(b*c - a*d)
^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/b + 4*b*c^2*Log[(a + b*x)/(c + d*
x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 8*a*c*d*PolyLog[3, (d*(a + b*
x))/(b*(c + d*x))] + (4*a^2*d^2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])/b
+ 4*b*c^2*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))])))/(4*b^2*(b*c - a*d)^2*g
^3)
```

fricas [F] time = 1.15, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2d^2i^2x^2 + 2\,A^2cdi^2x + A^2c^2i^2 + \left(B^2d^2i^2x^2 + 2\,B^2cdi^2x + B^2c^2i^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2 + 2\left(ABd^2i^2x^2 + 2\,A\right.}{b^3g^3x^3 + 3\,ab^2g^3x^2 + 3\,a^2bg^3x + a^3g^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x,
 algorithm="fricas")
```

```
[Out] integral((A^2*d^2*i^2*x^2 + 2*A^2*c*d*i^2*x + A^2*c^2*i^2 + (B^2*d^2*i^2*x^
2 + 2*B^2*c*d*i^2*x + B^2*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*
B*d^2*i^2*x^2 + 2*A*B*c*d*i^2*x + A*B*c^2*i^2)*log(e*((b*x + a)/(d*x + c))^
n))/(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^2 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{\left(bgx+ag\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x,
 algorithm="maxima")
```

```
[Out] -A*B*c*d*i^2*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a*b^4*d
)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g^3) +
2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3
) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)
*g^3)) + 1/2*A*B*c^2*i^2*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d)*g^3*
x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*d^2*lo
g(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*log(d*x + c)/(
(b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3)) + 1/2*A^2*d^2*i^2*((4*a*b*x + 3*a
^2)/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*log(b*x + a)/(b^3*g^3))
 - 2*(2*b*x + a)*A*B*c*d*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^
3*x^2 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - (2*b*x + a)*A^2*c*d*i^2/(b^4*g^3*x^2
 + 2*a*b^3*g^3*x + a^2*b^2*g^3) - A*B*c^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x
 + c))^n)/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*A^2*c^2*i^2/(b^3*
g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*(4*(b^2*c*d*i^2 - a*b*d^2*i^2)*B
^2*x + (b^2*c^2*i^2 + 2*a*b*c*d*i^2 - 3*a^2*d^2*i^2)*B^2 - 2*(B^2*b^2*d^2*i
^2*x^2 + 2*B^2*a*b*d^2*i^2*x + B^2*a^2*d^2*i^2)*log(b*x + a))*log((d*x + c)
^n)^2/(b^5*g^3*x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) - integrate(-(3*B^2*b^3*c
^2*d*i^2*x*log(e)^2 + B^2*b^3*c^3*i^2*log(e)^2 + (B^2*b^3*d^3*i^2*log(e)^2
+ 2*A*B*b^3*d^3*i^2*log(e))*x^3 + (3*B^2*b^3*c*d^2*i^2*log(e)^2 + 2*A*B*b^3
*c*d^2*i^2*log(e))*x^2 + (B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3
```

```
*B^2*b^3*c^2*d*i^2*x + B^2*b^3*c^3*i^2)*log((b*x + a)^n)^2 + 2*(3*B^2*b^3*c
^2*d*i^2*x*log(e) + B^2*b^3*c^3*i^2*log(e) + (B^2*b^3*d^3*i^2*log(e) + A*B*
b^3*d^3*i^2)*x^3 + (3*B^2*b^3*c*d^2*i^2*log(e) + A*B*b^3*c*d^2*i^2)*x^2)*lo
g((b*x + a)^n) + ((6*a*b^2*c*d^2*i^2*n - 7*a^2*b*d^3*i^2*n + (i^2*n - 6*i^2
*log(e))*b^3*c^2*d)*B^2*x - 2*(B^2*b^3*d^3*i^2*log(e) + A*B*b^3*d^3*i^2)*x^
3 + (a*b^2*c^2*d*i^2*n + 2*a^2*b*c*d^2*i^2*n - 3*a^3*d^3*i^2*n - 2*b^3*c^3*
i^2*log(e))*B^2 - 2*(A*B*b^3*c*d^2*i^2 + (2*a*b^2*d^3*i^2*n - (2*i^2*n - 3*
i^2*log(e))*b^3*c*d^2)*B^2)*x^2 - 2*(B^2*b^3*d^3*i^2*n*x^3 + 3*B^2*a*b^2*d^
3*i^2*n*x^2 + 3*B^2*a^2*b*d^3*i^2*n*x + B^2*a^3*d^3*i^2*n)*log(b*x + a) - 2
*(B^2*b^3*d^3*i^2*x^3 + 3*B^2*b^3*c*d^2*i^2*x^2 + 3*B^2*b^3*c^2*d*i^2*x + B
^2*b^3*c^3*i^2)*log((b*x + a)^n))*log((d*x + c)^n))/(b^6*d*g^3*x^4 + a^3*b^
3*c*g^3 + (b^6*c*g^3 + 3*a*b^5*d*g^3)*x^3 + 3*(a*b^5*c*g^3 + a^2*b^4*d*g^3)
*x^2 + (3*a^2*b^4*c*g^3 + a^3*b^3*d*g^3)*x), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^2\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2}{{\left(a\,g+b\,g\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^3,x)
```

```
[Out] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^3, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**3
,x)
```

```
[Out] Timed out
```

3.175 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^4}\,dx$

Optimal. Leaf size=157

$$-\frac{i^2(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{3g^4(a+bx)^3(bc-ad)}-\frac{2Bi^2n(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{9g^4(a+bx)^3(bc-ad)}-\frac{2B^2i^2n^2(c+dx)^3}{27g^4(a+bx)^3(bc-ad)}$$

```
[Out] -2/27*B^2*i^2*n^2*(d*x+c)^3/(-a*d+b*c)/g^4/(b*x+a)^3-2/9*B*i^2*n*(d*x+c)^3*
(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/g^4/(b*x+a)^3-1/3*i^2*(d*x+c)^3*
(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/g^4/(b*x+a)^3
```

Rubi [C] time = 3.17, antiderivative size = 889, normalized size of antiderivative = 5.66, number of steps used = 86, number of rules used = 11, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.244, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i^2n^2\log^2(a+bx)d^3}{3b^3(bc-ad)g^4}+\frac{B^2i^2n^2\log^2(c+dx)d^3}{3b^3(bc-ad)g^4}-\frac{2B^2i^2n^2\log(a+bx)d^3}{9b^3(bc-ad)g^4}-\frac{2Bi^2n\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{3b^3(bc-ad)g^4}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x
)^4,x]
```

```
[Out] (-2*B^2*(b*c - a*d)^2*i^2*n^2)/(27*b^3*g^4*(a + b*x)^3) - (2*B^2*d*(b*c - a
*d)*i^2*n^2)/(9*b^3*g^4*(a + b*x)^2) - (2*B^2*d^2*i^2*n^2)/(9*b^3*g^4*(a +
b*x)) - (2*B^2*d^3*i^2*n^2*Log[a + b*x])/(9*b^3*(b*c - a*d)*g^4) + (B^2*d^3
*i^2*n^2*Log[a + b*x]^2)/(3*b^3*(b*c - a*d)*g^4) - (2*B*(b*c - a*d)^2*i^2*n
*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(9*b^3*g^4*(a + b*x)^3) - (2*B*d*(
b*c - a*d)*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^3*g^4*(a + b*
x)^2) - (2*B*d^2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^3*g^4*(
a + b*x)) - (2*B*d^3*i^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]))/(3*b^3*(b*c - a*d)*g^4) - ((b*c - a*d)^2*i^2*(A + B*Log[e*((a + b*x)/(
c + d*x))^n])^2)/(3*b^3*g^4*(a + b*x)^3) - (d*(b*c - a*d)*i^2*(A + B*Log[e*
((a + b*x)/(c + d*x))^n])^2)/(b^3*g^4*(a + b*x)^2) - (d^2*i^2*(A + B*Log[e*
((a + b*x)/(c + d*x))^n])^2)/(b^3*g^4*(a + b*x)) + (2*B^2*d^3*i^2*n^2*Log[c
 + d*x])/(9*b^3*(b*c - a*d)*g^4) - (2*B^2*d^3*i^2*n^2*Log[-((d*(a + b*x))/(
b*c - a*d))]*Log[c + d*x])/(3*b^3*(b*c - a*d)*g^4) + (2*B*d^3*i^2*n*(A + B*
Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(3*b^3*(b*c - a*d)*g^4) + (B^
2*d^3*i^2*n^2*Log[c + d*x]^2)/(3*b^3*(b*c - a*d)*g^4) - (2*B^2*d^3*i^2*n^2*
Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(3*b^3*(b*c - a*d)*g^4) - (2*B
^2*d^3*i^2*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(3*b^3*(b*c - a*d)
*g^4) - (2*B^2*d^3*i^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(3*b^3*(b
*c - a*d)*g^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
```

```
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(175c+175dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^4}\,dx = \int\left(\frac{30625(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^4(a+bx)^4}+\frac{61250d(bc\right.$$

$$=\frac{\left(30625d^2\right)\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(a+bx)^2}\,dx}{b^2g^4}+\frac{(61250d(bc-ad))\int}{b^2g}$$

$$=-\frac{30625(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^3g^4(a+bx)^3}-\frac{30625d(bc-}{}$$

$$=-\frac{30625(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^3g^4(a+bx)^3}-\frac{30625d(bc-}{}$$

$$=-\frac{30625(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^3g^4(a+bx)^3}-\frac{30625d(bc-}{}$$

$$=-\frac{30625(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^3g^4(a+bx)^3}-\frac{30625d(bc-}{}$$

$$=-\frac{61250B(bc-ad)^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{9b^3g^4(a+bx)^3}-\frac{61250Bd(b}{}$$

$$=-\frac{61250B(bc-ad)^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{9b^3g^4(a+bx)^3}-\frac{61250Bd(b}{}$$

$$=-\frac{61250B(bc-ad)^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{9b^3g^4(a+bx)^3}-\frac{61250Bd(b}{}$$

$$=-\frac{61250B^2(bc-ad)^2n^2}{27b^3g^4(a+bx)^3}-\frac{61250B^2d(bc-ad)n^2}{9b^3g^4(a+bx)^2}-\frac{61250B^2}{9b^3g^4(a-}$$

$$=-\frac{61250B^2(bc-ad)^2n^2}{27b^3g^4(a+bx)^3}-\frac{61250B^2d(bc-ad)n^2}{9b^3g^4(a+bx)^2}-\frac{61250B^2}{9b^3g^4(a-}$$

$$=-\frac{61250B^2(bc-ad)^2n^2}{27b^3g^4(a+bx)^3}-\frac{61250B^2d(bc-ad)n^2}{9b^3g^4(a+bx)^2}-\frac{61250B^2}{9b^3g^4(a-}$$

Mathematica [C] time = 2.24, size = 1415, normalized size = 9.01

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g +
 b*g*x)^4,x]
```

```
[Out] -1/54*(i^2*(18*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 54*
d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - 54*d^2
*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 54*B
*d^2*n*(a + b*x)^2*(2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) +
2*d*(a + b*x)*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*d*(a
+ b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + 2*B*n*(b*c - a
*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) - B*d*n*(a + b*x)
*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLo
g[2, (d*(a + b*x))/(-(b*c) + a*d)]) + B*d*n*(a + b*x)*((2*Log[(d*(a + b*x))
/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/
(b*c - a*d)])) + 27*B*d*n*(a + b*x)*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]) + 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n]) - 4*d^2*(a + b*x)^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d
*x))^n]) + 4*d^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c +
 d*x] - 4*B*d*n*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*
x)*Log[c + d*x]) + B*n*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^
2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*n*(a
 + b*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) -
 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 2*B*d^2*n*(a + b*x)^2*((2*Lo
g[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2,
 (b*(c + d*x))/(b*c - a*d)])) + B*n*(12*(b*c - a*d)^3*(A + B*Log[e*((a + b*
x)/(c + d*x))^n]) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c +
d*x))^n]) + 36*d^3*(a + b*x)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]) - 36*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c +
 d*x] + 36*B*d^2*n*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a
 + b*x)*Log[c + d*x]) - 9*B*d*n*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*
d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d
*x]) + 2*B*n*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c -
a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c
 + d*x]) - 18*B*d^3*n*(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c
 + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B
*d^3*n*(a + b*x)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Lo
g[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))))/(b^3*(b*c - a*d)*g
^4*(a + b*x)^3)
```

fricas [B] time = 1.00, size = 975, normalized size = 6.21

$$-\frac{2\left(B^2b^3c^3-B^2a^3d^3\right)i^2n^2+6\left(ABb^3c^3-ABa^3d^3\right)i^2n+9\left(A^2b^3c^3-A^2a^3d^3\right)i^2+3\left(2\left(B^2b^3cd^2-B^2ab^2d^3\right)i^2n^2+\cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x,
 algorithm="fricas")
```

```
[Out] -1/27*(2*(B^2*b^3*c^3 - B^2*a^3*d^3)*i^2*n^2 + 6*(A*B*b^3*c^3 - A*B*a^3*d^3
)*i^2*n + 9*(A^2*b^3*c^3 - A^2*a^3*d^3)*i^2 + 3*(2*(B^2*b^3*c*d^2 - B^2*a*b
^2*d^3)*i^2*n^2 + 6*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*i^2*n + 9*(A^2*b^3*c*d^
2 - A^2*a*b^2*d^3)*i^2)*x^2 + 9*(3*(B^2*b^3*c*d^2 - B^2*a*b^2*d^3)*i^2*x^2
+ 3*(B^2*b^3*c^2*d - B^2*a^2*b*d^3)*i^2*x + (B^2*b^3*c^3 - B^2*a^3*d^3)*i^2
```

```
)*log(e)^2 + 9*(B^2*b^3*d^3*i^2*n^2*x^3 + 3*B^2*b^3*c*d^2*i^2*n^2*x^2 + 3*B
^2*b^3*c^2*d*i^2*n^2*x + B^2*b^3*c^3*i^2*n^2)*log((b*x + a)/(d*x + c))^2 +
3*(2*(B^2*b^3*c^2*d - B^2*a^2*b*d^3)*i^2*n^2 + 6*(A*B*b^3*c^2*d - A*B*a^2*b
*d^3)*i^2*n + 9*(A^2*b^3*c^2*d - A^2*a^2*b*d^3)*i^2)*x + 6*((B^2*b^3*c^3 -
B^2*a^3*d^3)*i^2*n + 3*(A*B*b^3*c^3 - A*B*a^3*d^3)*i^2 + 3*((B^2*b^3*c*d^2
- B^2*a*b^2*d^3)*i^2*n + 3*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*i^2)*x^2 + 3*((B
^2*b^3*c^2*d - B^2*a^2*b*d^3)*i^2*n + 3*(A*B*b^3*c^2*d - A*B*a^2*b*d^3)*i^2
)*x + 3*(B^2*b^3*d^3*i^2*n*x^3 + 3*B^2*b^3*c*d^2*i^2*n*x^2 + 3*B^2*b^3*c^2*
d*i^2*n*x + B^2*b^3*c^3*i^2*n)*log((b*x + a)/(d*x + c)))*log(e) + 6*(B^2*b^
3*c^3*i^2*n^2 + 3*A*B*b^3*c^3*i^2*n + (B^2*b^3*d^3*i^2*n^2 + 3*A*B*b^3*d^3*
i^2*n)*x^3 + 3*(B^2*b^3*c*d^2*i^2*n^2 + 3*A*B*b^3*c*d^2*i^2*n)*x^2 + 3*(B^2
*b^3*c^2*d*i^2*n^2 + 3*A*B*b^3*c^2*d*i^2*n)*x)*log((b*x + a)/(d*x + c)))/((
b^7*c - a*b^6*d)*g^4*x^3 + 3*(a*b^6*c - a^2*b^5*d)*g^4*x^2 + 3*(a^2*b^5*c -
 a^3*b^4*d)*g^4*x + (a^3*b^4*c - a^4*b^3*d)*g^4)
```

giac [A] time = 110.18, size = 176, normalized size = 1.12

$$\frac{1}{27}\left(\frac{9\,(dx+c)^3B^2n^2\log\left(\frac{bx+a}{dx+c}\right)^2}{(bx+a)^3g^4}+\frac{6\left(B^2n^2+3\,ABn+3\,B^2n\right)(dx+c)^3\log\left(\frac{bx+a}{dx+c}\right)}{(bx+a)^3g^4}+\frac{\left(2\,B^2n^2+6\,ABn+6\,B^2n\right.}{(b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x,
 algorithm="giac")
```

```
[Out] 1/27*(9*(d*x + c)^3*B^2*n^2*log((b*x + a)/(d*x + c))^2/((b*x + a)^3*g^4) +
6*(B^2*n^2 + 3*A*B*n + 3*B^2*n)*(d*x + c)^3*log((b*x + a)/(d*x + c))/((b*x
+ a)^3*g^4) + (2*B^2*n^2 + 6*A*B*n + 6*B^2*n + 9*A^2 + 18*A*B + 9*B^2)*(d*x
 + c)^3/((b*x + a)^3*g^4))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int\frac{(dix+ci)^2\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{\left(bgx+ag\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4,x)
```

maxima [B] time = 4.97, size = 5588, normalized size = 35.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x,
 algorithm="maxima")
```

```
[Out] -1/9*A*B*d^2*i^2*n*((11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2 + 6*(3*b^4*c^
2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^2*c*d + 2*a^3
*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*(a*b^7*c^2 -
2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4
*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*g^4) + 6*(3*b
^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(b*x + a)/((b^6*c^3 - 3*a*b^5*c^2*d +
3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^
3)*log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*
```

g^4)) - 1/9*A*B*c^2*i^2*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*
d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g^4
x^3 + 3(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c^2
 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*
b*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^
2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*
b^2*c*d^2 - a^3*b*d^3)*g^4)) - 1/9*A*B*c*d*i^2*n*((5*a*b^2*c^2 - 22*a^2*b*c
*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*
d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b
^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*
c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4)
 - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3
*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 -
 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4)) - 1/3*(3*b*x + a)*B^2
*c*d*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^5*g^4*x^3 + 3*a*b^4*g^
4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 1/3*(3*b^2*x^2 + 3*a*b*x + a^2)*B^
2*d^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^6*g^4*x^3 + 3*a*b^5*g
^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 1/54*(6*n*((6*b^2*d^2*x^2 + 2*b^2
*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*
b^5*c*d + a^2*b^4*d^2)*g^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2
)*g^4*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*
c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*
b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^
3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*g^4))*log(e*(b*x/(d*x + c)
 + a/(d*x + c))^n) + (4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 - 85*a^3
d^3 + 66(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 +
 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^
2 + 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*b^2*c*d
^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x +
a^3*d^3)*log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*d^3
*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^
3)*log(b*x + a))*log(d*x + c))*n^2/(a^3*b^4*c^3*g^4 - 3*a^4*b^3*c^2*d*g^4 +
 3*a^5*b^2*c*d^2*g^4 - a^6*b*d^3*g^4 + (b^7*c^3*g^4 - 3*a*b^6*c^2*d*g^4 + 3
*a^2*b^5*c*d^2*g^4 - a^3*b^4*d^3*g^4)*x^3 + 3*(a*b^6*c^3*g^4 - 3*a^2*b^5*c^
2*d*g^4 + 3*a^3*b^4*c*d^2*g^4 - a^4*b^3*d^3*g^4)*x^2 + 3*(a^2*b^5*c^3*g^4 -
 3*a^3*b^4*c^2*d*g^4 + 3*a^4*b^3*c*d^2*g^4 - a^5*b^2*d^3*g^4)*x))*B^2*c^2*i
^2 - 1/54*(6*n*((5*a*b^2*c^2 - 22*a^2*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*
b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*
a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d
^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^
4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x +
 a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*
b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 -
 a^3*b^2*d^3)*g^4))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (19*a*b^3*c^3
 - 189*a^2*b^2*c^2*d + 189*a^3*b*c*d^2 - 19*a^4*d^3 - 6*(27*b^4*c^2*d - 32*a
*b^3*c*d^2 + 5*a^2*b^2*d^3)*x^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*d^
2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c*d
^2 - a^3*b*d^3)*x)*log(b*x + a)^2 + 18*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b^4*c*
d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*b^2*c
*d^2 - a^3*b*d^3)*x)*log(d*x + c)^2 + 3*(9*b^4*c^3 - 125*a*b^3*c^2*d + 135*
a^2*b^2*c*d^2 - 19*a^3*b*d^3)*x - 6*(27*a^3*b*c*d^2 - 5*a^4*d^3 + (27*b^4*c
*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + 3*(27*a^
2*b^2*c*d^2 - 5*a^3*b*d^3)*x)*log(b*x + a) + 6*(27*a^3*b*c*d^2 - 5*a^4*d^3
+ (27*b^4*c*d^2 - 5*a*b^3*d^3)*x^3 + 3*(27*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2
 + 3*(27*a^2*b^2*c*d^2 - 5*a^3*b*d^3)*x - 6*(3*a^3*b*c*d^2 - a^4*d^3 + (3*b
^4*c*d^2 - a*b^3*d^3)*x^3 + 3*(3*a*b^3*c*d^2 - a^2*b^2*d^3)*x^2 + 3*(3*a^2*
b^2*c*d^2 - a^3*b*d^3)*x)*log(b*x + a))*log(d*x + c))*n^2/(a^3*b^5*c^3*g^4
 - 3*a^4*b^4*c^2*d*g^4 + 3*a^5*b^3*c*d^2*g^4 - a^6*b^2*d^3*g^4 + (b^8*c^3*g^
4 - 3*a*b^7*c^2*d*g^4 + 3*a^2*b^6*c*d^2*g^4 - a^3*b^5*d^3*g^4)*x^3 + 3*(a*b

```
^7*c^3*g^4 - 3*a^2*b^6*c^2*d*g^4 + 3*a^3*b^5*c*d^2*g^4 - a^4*b^4*d^3*g^4)*x
^2 + 3*(a^2*b^6*c^3*g^4 - 3*a^3*b^5*c^2*d*g^4 + 3*a^4*b^4*c*d^2*g^4 - a^5*b
^3*d^3*g^4)*x))*B^2*c*d*i^2 - 1/54*(6*n*((11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*
a^4*d^2 + 6*(3*b^4*c^2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 -
7*a^2*b^2*c*d + 2*a^3*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*
x^3 + 3*(a*b^7*c^2 - 2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2
- 2*a^3*b^5*c*d + a^4*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b
^3*d^2)*g^4) + 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(b*x + a)/((b^6*c
^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d -
 3*a*b*c*d^2 + a^2*d^3)*log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*
c*d^2 - a^3*b^3*d^3)*g^4))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (85*a^2
*b^3*c^3 - 108*a^3*b^2*c^2*d + 27*a^4*b*c*d^2 - 4*a^5*d^3 + 6*(18*b^5*c^3 -
 27*a*b^4*c^2*d + 11*a^2*b^3*c*d^2 - 2*a^3*b^2*d^3)*x^2 - 18*(3*a^3*b^2*c^2
*d - 3*a^4*b*c*d^2 + a^5*d^3 + (3*b^5*c^2*d - 3*a*b^4*c*d^2 + a^2*b^3*d^3)*
x^3 + 3*(3*a*b^4*c^2*d - 3*a^2*b^3*c*d^2 + a^3*b^2*d^3)*x^2 + 3*(3*a^2*b^3*
c^2*d - 3*a^3*b^2*c*d^2 + a^4*b*d^3)*x)*log(b*x + a)^2 - 18*(3*a^3*b^2*c^2*
d - 3*a^4*b*c*d^2 + a^5*d^3 + (3*b^5*c^2*d - 3*a*b^4*c*d^2 + a^2*b^3*d^3)*x
^3 + 3*(3*a*b^4*c^2*d - 3*a^2*b^3*c*d^2 + a^3*b^2*d^3)*x^2 + 3*(3*a^2*b^3*c
^2*d - 3*a^3*b^2*c*d^2 + a^4*b*d^3)*x)*log(d*x + c)^2 + 3*(63*a*b^4*c^3 - 8
6*a^2*b^3*c^2*d + 27*a^3*b^2*c*d^2 - 4*a^4*b*d^3)*x + 6*(18*a^3*b^2*c^2*d -
 9*a^4*b*c*d^2 + 2*a^5*d^3 + (18*b^5*c^2*d - 9*a*b^4*c*d^2 + 2*a^2*b^3*d^3)
*x^3 + 3*(18*a*b^4*c^2*d - 9*a^2*b^3*c*d^2 + 2*a^3*b^2*d^3)*x^2 + 3*(18*a^2
*b^3*c^2*d - 9*a^3*b^2*c*d^2 + 2*a^4*b*d^3)*x)*log(b*x + a) - 6*(18*a^3*b^2
*c^2*d - 9*a^4*b*c*d^2 + 2*a^5*d^3 + (18*b^5*c^2*d - 9*a*b^4*c*d^2 + 2*a^2*
b^3*d^3)*x^3 + 3*(18*a*b^4*c^2*d - 9*a^2*b^3*c*d^2 + 2*a^3*b^2*d^3)*x^2 + 3
*(18*a^2*b^3*c^2*d - 9*a^3*b^2*c*d^2 + 2*a^4*b*d^3)*x - 6*(3*a^3*b^2*c^2*d
- 3*a^4*b*c*d^2 + a^5*d^3 + (3*b^5*c^2*d - 3*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3
 + 3*(3*a*b^4*c^2*d - 3*a^2*b^3*c*d^2 + a^3*b^2*d^3)*x^2 + 3*(3*a^2*b^3*c^2
*d - 3*a^3*b^2*c*d^2 + a^4*b*d^3)*x)*log(b*x + a))*log(d*x + c))*n^2/(a^3*b
^6*c^3*g^4 - 3*a^4*b^5*c^2*d*g^4 + 3*a^5*b^4*c*d^2*g^4 - a^6*b^3*d^3*g^4 +
(b^9*c^3*g^4 - 3*a*b^8*c^2*d*g^4 + 3*a^2*b^7*c*d^2*g^4 - a^3*b^6*d^3*g^4)*x
^3 + 3*(a*b^8*c^3*g^4 - 3*a^2*b^7*c^2*d*g^4 + 3*a^3*b^6*c*d^2*g^4 - a^4*b^5
*d^3*g^4)*x^2 + 3*(a^2*b^7*c^3*g^4 - 3*a^3*b^6*c^2*d*g^4 + 3*a^4*b^5*c*d^2*
g^4 - a^5*b^4*d^3*g^4)*x))*B^2*d^2*i^2 - 2/3*(3*b*x + a)*A*B*c*d*i^2*log(e*
(b*x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3
*g^4*x + a^3*b^2*g^4) - 2/3*(3*b^2*x^2 + 3*a*b*x + a^2)*A*B*d^2*i^2*log(e*(
b*x/(d*x + c) + a/(d*x + c))^n)/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*
g^4*x + a^3*b^3*g^4) - 1/3*B^2*c^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^
n)^2/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) - 1/3*(3
*b*x + a)*A^2*c*d*i^2/(b^5*g^4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^
3*b^2*g^4) - 1/3*(3*b^2*x^2 + 3*a*b*x + a^2)*A^2*d^2*i^2/(b^6*g^4*x^3 + 3*a
*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 2/3*A*B*c^2*i^2*log(e*(b*x/
(d*x + c) + a/(d*x + c))^n)/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*
x + a^3*b*g^4) - 1/3*A^2*c^2*i^2/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2
*g^4*x + a^3*b*g^4)
```

mupad [B] time = 7.48, size = 1195, normalized size = 7.61

$$-\frac{x\left(9\,c\,A^2\,b^2\,d\,i^2+9\,a\,A^2\,b\,d^2\,i^2+6\,c\,A\,B\,b^2\,d\,i^2\,n+6\,a\,A\,B\,b\,d^2\,i^2\,n+2\,c\,B^2\,b^2\,d\,i^2\,n^2+2\,a\,B^2\,b\,d^2\,i^2\,n^2\right)+x^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^4,x)
```

```
[Out] - (x*(9*A^2*a*b*d^2*i^2 + 9*A^2*b^2*c*d*i^2 + 2*B^2*a*b*d^2*i^2*n^2 + 2*B^2
*b^2*c*d*i^2*n^2 + 6*A*B*a*b*d^2*i^2*n + 6*A*B*b^2*c*d*i^2*n) + x^2*(9*A^2*
```

```
b^2*d^2*i^2 + 2*B^2*b^2*d^2*i^2*n^2 + 6*A*B*b^2*d^2*i^2*n) + 3*A^2*a^2*d^2*
i^2 + 3*A^2*b^2*c^2*i^2 + (2*B^2*a^2*d^2*i^2*n^2)/3 + (2*B^2*b^2*c^2*i^2*n^
2)/3 + 3*A^2*a*b*c*d*i^2 + 2*A*B*a^2*d^2*i^2*n + 2*A*B*b^2*c^2*i^2*n + (2*B
^2*a*b*c*d*i^2*n^2)/3 + 2*A*B*a*b*c*d*i^2*n)/(9*a^3*b^3*g^4 + 9*b^6*g^4*x^3
 + 27*a^2*b^4*g^4*x + 27*a*b^5*g^4*x^2) - log(e*((a + b*x)/(c + d*x))^n)*((
a*(2*A*B*a*d^2*i^2 - B^2*a*d^2*i^2*n + B^2*b*c*d*i^2*n + 2*A*B*b*c*d*i^2) +
 x*(b*(2*A*B*a*d^2*i^2 - B^2*a*d^2*i^2*n + B^2*b*c*d*i^2*n + 2*A*B*b*c*d*i^
2) + 4*A*B*a*b*d^2*i^2 + 4*A*B*b^2*c*d*i^2 - 2*B^2*a*b*d^2*i^2*n + 2*B^2*b^
2*c*d*i^2*n) + 2*A*B*b^2*c^2*i^2 - 2*B^2*a^2*d^2*i^2*n + 6*A*B*b^2*d^2*i^2*
x^2 + 2*B^2*a*b*c*d*i^2*n)/(3*a^3*b^3*g^4 + 3*b^6*g^4*x^3 + 9*a^2*b^4*g^4*x
 + 9*a*b^5*g^4*x^2) + (2*B^2*d^3*i^2*(x*(b*((a*b^3*g^4*n*(a*d - b*c))/d + (
b^3*g^4*n*(a*d - b*c)*(3*a*d - b*c))/(2*d^2)) + (2*a*b^4*g^4*n*(a*d - b*c))
/d + (b^4*g^4*n*(a*d - b*c)*(3*a*d - b*c))/d^2) + a*((a*b^3*g^4*n*(a*d - b*
c))/d + (b^3*g^4*n*(a*d - b*c)*(3*a*d - b*c))/(2*d^2)) + (3*b^5*g^4*n*x^2*(
a*d - b*c))/d + (b^3*g^4*n*(a*d - b*c)*(3*a^2*d^2 + b^2*c^2 - 3*a*b*c*d))/d
^3))/(3*b^3*g^4*(a*d - b*c)*(3*a^3*b^3*g^4 + 3*b^6*g^4*x^3 + 9*a^2*b^4*g^4*
x + 9*a*b^5*g^4*x^2))) - log(e*((a + b*x)/(c + d*x))^n)^2*((a*((B^2*c*d*i^2
)/(3*b^2) + (B^2*a*d^2*i^2)/(3*b^3)) + x*(b*((B^2*c*d*i^2)/(3*b^2) + (B^2*a
*d^2*i^2)/(3*b^3)) + (2*B^2*c*d*i^2)/(3*b) + (2*B^2*a*d^2*i^2)/(3*b^2)) + (
B^2*c^2*i^2)/(3*b) + (B^2*d^2*i^2*x^2)/b)/(a^3*g^4 + b^3*g^4*x^3 + 3*a*b^2*
g^4*x^2 + 3*a^2*b*g^4*x) - (B^2*d^3*i^2)/(3*b^3*g^4*(a*d - b*c))) - (B*d^3*
i^2*n*atan((((9*b^4*c*g^4 + 9*a*b^3*d*g^4)/(9*b^3*g^4) + 2*b*d*x)*1i)/(a*d
- b*c))*(3*A + B*n)*4i)/(9*b^3*g^4*(a*d - b*c))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**4
,x)
```

```
[Out] Timed out
```

3.176 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^5}\,dx$

Optimal. Leaf size=319

$$-\frac{bi^2(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{4g^5(a+bx)^4(bc-ad)^2}-\frac{bBi^2n(c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{8g^5(a+bx)^4(bc-ad)^2}+\frac{di^2(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{3g^5(a+bx)^3(bc-ad}$$

```
[Out] 2/27*B^2*d*i^2*n^2*(d*x+c)^3/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/32*b*B^2*i^2*n^2*
(d*x+c)^4/(-a*d+b*c)^2/g^5/(b*x+a)^4+2/9*B*d*i^2*n*(d*x+c)^3*(A+B*ln(e*((b*
x+a)/(d*x+c))^n))/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/8*b*B*i^2*n*(d*x+c)^4*(A+B*l
n(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^2/g^5/(b*x+a)^4+1/3*d*i^2*(d*x+c)^3*(A
+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/g^5/(b*x+a)^3-1/4*b*i^2*(d*x+c
)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/g^5/(b*x+a)^4
```

Rubi [C] time = 3.79, antiderivative size = 989, normalized size of antiderivative = 3.10, number of steps used = 98, number of rules used = 11, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.244, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$-\frac{B^2i^2n^2\log^2(a+bx)d^4}{12b^3(bc-ad)^2g^5}-\frac{B^2i^2n^2\log^2(c+dx)d^4}{12b^3(bc-ad)^2g^5}+\frac{7B^2i^2n^2\log(a+bx)d^4}{72b^3(bc-ad)^2g^5}+\frac{Bi^2n\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{6b^3(bc-ad)^2g^5}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x
)^5,x]
```

```
[Out] -(B^2*(b*c - a*d)^2*i^2*n^2)/(32*b^3*g^5*(a + b*x)^4) - (11*B^2*d*(b*c - a*
d)*i^2*n^2)/(216*b^3*g^5*(a + b*x)^3) + (5*B^2*d^2*i^2*n^2)/(144*b^3*g^5*(a
 + b*x)^2) + (7*B^2*d^3*i^2*n^2)/(72*b^3*(b*c - a*d)*g^5*(a + b*x)) + (7*B^
2*d^4*i^2*n^2*Log[a + b*x])/(72*b^3*(b*c - a*d)^2*g^5) - (B^2*d^4*i^2*n^2*L
og[a + b*x]^2)/(12*b^3*(b*c - a*d)^2*g^5) - (B*(b*c - a*d)^2*i^2*n*(A + B*L
og[e*((a + b*x)/(c + d*x))^n]))/(8*b^3*g^5*(a + b*x)^4) - (5*B*d*(b*c - a*d
)*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(18*b^3*g^5*(a + b*x)^3) -
(B*d^2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(12*b^3*g^5*(a + b*x)^
2) + (B*d^3*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^3*(b*c - a*d
)*g^5*(a + b*x)) + (B*d^4*i^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d
*x))^n]))/(6*b^3*(b*c - a*d)^2*g^5) - ((b*c - a*d)^2*i^2*(A + B*Log[e*((a +
 b*x)/(c + d*x))^n])^2)/(4*b^3*g^5*(a + b*x)^4) - (2*d*(b*c - a*d)*i^2*(A +
 B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*b^3*g^5*(a + b*x)^3) - (d^2*i^2*(A
 + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^3*g^5*(a + b*x)^2) - (7*B^2*d^
4*i^2*n^2*Log[c + d*x])/(72*b^3*(b*c - a*d)^2*g^5) + (B^2*d^4*i^2*n^2*Log[-
((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(6*b^3*(b*c - a*d)^2*g^5) - (B*d
^4*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(6*b^3*(b*c -
 a*d)^2*g^5) - (B^2*d^4*i^2*n^2*Log[c + d*x]^2)/(12*b^3*(b*c - a*d)^2*g^5)
+ (B^2*d^4*i^2*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(6*b^3*(b*c
 - a*d)^2*g^5) + (B^2*d^4*i^2*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])
/(6*b^3*(b*c - a*d)^2*g^5) + (B^2*d^4*i^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c
 - a*d)])/(6*b^3*(b*c - a*d)^2*g^5)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(176c+176dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^5}\,dx = \int\left(\frac{30976(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^5(a+bx)^5}+\frac{61952d(bc-\right.$$

$$=\frac{(30976d^2)\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(a+bx)^3}dx}{b^2g^5}+\frac{(61952d(bc-ad))\int\frac{\left(A+\right.}{b^2g^5}$$

$$=-\frac{7744(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^5(a+bx)^4}-\frac{61952d(bc-ad)}{3b^3}$$

$$=-\frac{7744(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^5(a+bx)^4}-\frac{61952d(bc-ad)}{3b^3}$$

$$=-\frac{7744(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^5(a+bx)^4}-\frac{61952d(bc-ad)}{3b^3}$$

$$=-\frac{7744(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^5(a+bx)^4}-\frac{61952d(bc-ad)}{3b^3}$$

$$=-\frac{3872B(bc-ad)^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^3g^5(a+bx)^4}-\frac{77440Bd(bc-}{9}$$

$$=-\frac{3872B(bc-ad)^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^3g^5(a+bx)^4}-\frac{77440Bd(bc-}{9}$$

$$=-\frac{3872B(bc-ad)^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^3g^5(a+bx)^4}-\frac{77440Bd(bc-}{9}$$

$$=-\frac{968B^2(bc-ad)^2n^2}{b^3g^5(a+bx)^4}-\frac{42592B^2d(bc-ad)n^2}{27b^3g^5(a+bx)^3}+\frac{9680B^2d^2n^2}{9b^3g^5(a+bx)^2}$$

$$=-\frac{968B^2(bc-ad)^2n^2}{b^3g^5(a+bx)^4}-\frac{42592B^2d(bc-ad)n^2}{27b^3g^5(a+bx)^3}+\frac{9680B^2d^2n^2}{9b^3g^5(a+bx)^2}$$

$$=-\frac{968B^2(bc-ad)^2n^2}{b^3g^5(a+bx)^4}-\frac{42592B^2d(bc-ad)n^2}{27b^3g^5(a+bx)^3}+\frac{9680B^2d^2n^2}{9b^3g^5(a+bx)^2}$$

Mathematica [C] time = 3.28, size = 1860, normalized size = 5.83

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g +
 b*g*x)^5,x]
```

```
[Out] -1/864*(i^2*(216*(b*c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - 5
76*d*(-(b*c) + a*d)^3*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 +
432*d^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2
+ 216*B*d^2*n*(a + b*x)^2*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x
))^n]) + 4*d*(-(b*c) + a*d)*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
) - 4*d^2*(a + b*x)^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) +
 4*d^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 4*
B*d*n*(a + b*x)*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c +
 d*x]) + B*n*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x
)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) + 2*B*d^2*n*(a + b*x)^2*
(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog
[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 2*B*d^2*n*(a + b*x)^2*((2*Log[(d*(a +
b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d
*x))/(b*c - a*d)])) + 32*B*d*n*(a + b*x)*(12*(b*c - a*d)^3*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n]) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[e*((a + b*
x)/(c + d*x))^n]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/
(c + d*x))^n]) + 36*d^3*(a + b*x)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n]) - 36*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Lo
g[c + d*x] + 36*B*d^2*n*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] -
 d*(a + b*x)*Log[c + d*x]) - 9*B*d*n*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c)
 + a*d)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[
c + d*x]) + 2*B*n*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b
*c - a*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*
Log[c + d*x]) - 18*B*d^3*n*(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[
(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) +
 18*B*d^3*n*(a + b*x)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x
])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 3*B*n*(36*(b*
c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 48*d*(-(b*c) + a*d)^3*(
a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 72*d^2*(b*c - a*d)^2*(a +
 b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 144*d^3*(-(b*c) + a*d)*(a
+ b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 144*d^4*(a + b*x)^4*Log[a
 + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 144*d^4*(a + b*x)^4*(A + B
*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 144*B*d^3*n*(a + b*x)^3*(b*
c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + 36*B*d^2*n
*(a + b*x)^2*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*(a + b*x
)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) - 8*B*d*n*(a + b*x)*(2*(
b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a + b*x)^2
+ 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x]) + 3*B*n*
(3*(b*c - a*d)^4 + 4*d*(-(b*c) + a*d)^3*(a + b*x) + 6*d^2*(b*c - a*d)^2*(a
+ b*x)^2 + 12*d^3*(-(b*c) + a*d)*(a + b*x)^3 - 12*d^4*(a + b*x)^4*Log[a + b
*x] + 12*d^4*(a + b*x)^4*Log[c + d*x]) + 72*B*d^4*n*(a + b*x)^4*(Log[a + b*
x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a +
 b*x))/(-(b*c) + a*d)]) - 72*B*d^4*n*(a + b*x)^4*((2*Log[(d*(a + b*x))/(-(b
*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c
- a*d)]))))/(b^3*(b*c - a*d)^2*g^5*(a + b*x)^4)
```

fricas [B] time = 0.94, size = 1729, normalized size = 5.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5,x,
 algorithm="fricas")
```

```
[Out] -1/864*((27*B^2*b^4*c^4 - 64*B^2*a*b^3*c^3*d + 37*B^2*a^4*d^4)*i^2*n^2 + 12
*(9*A*B*b^4*c^4 - 16*A*B*a*b^3*c^3*d + 7*A*B*a^4*d^4)*i^2*n - 12*(7*(B^2*b^
4*c*d^3 - B^2*a*b^3*d^4)*i^2*n^2 + 12*(A*B*b^4*c*d^3 - A*B*a*b^3*d^4)*i^2*n
)*x^3 + 72*(3*A^2*b^4*c^4 - 4*A^2*a*b^3*c^3*d + A^2*a^4*d^4)*i^2 - 6*((5*B^
2*b^4*c^2*d^2 + 32*B^2*a*b^3*c*d^3 - 37*B^2*a^2*b^2*d^4)*i^2*n^2 - 12*(A*B*
b^4*c^2*d^2 - 8*A*B*a*b^3*c*d^3 + 7*A*B*a^2*b^2*d^4)*i^2*n - 72*(A^2*b^4*c^
```

```
2*d^2 - 2*A^2*a*b^3*c*d^3 + A^2*a^2*b^2*d^4)*i^2)*x^2 + 72*(6*(B^2*b^4*c^2*
d^2 - 2*B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*i^2*x^2 + 4*(2*B^2*b^4*c^3*d - 3
*B^2*a*b^3*c^2*d^2 + B^2*a^3*b*d^4)*i^2*x + (3*B^2*b^4*c^4 - 4*B^2*a*b^3*c^
3*d + B^2*a^4*d^4)*i^2)*log(e)^2 - 72*(B^2*b^4*d^4*i^2*n^2*x^4 + 4*B^2*a*b^
3*d^4*i^2*n^2*x^3 - 6*(B^2*b^4*c^2*d^2 - 2*B^2*a*b^3*c*d^3)*i^2*n^2*x^2 - 4
*(2*B^2*b^4*c^3*d - 3*B^2*a*b^3*c^2*d^2)*i^2*n^2*x - (3*B^2*b^4*c^4 - 4*B^2
*a*b^3*c^3*d)*i^2*n^2)*log((b*x + a)/(d*x + c))^2 + 4*((11*B^2*b^4*c^3*d -
48*B^2*a*b^3*c^2*d^2 + 37*B^2*a^3*b*d^4)*i^2*n^2 + 12*(5*A*B*b^4*c^3*d - 12
*A*B*a*b^3*c^2*d^2 + 7*A*B*a^3*b*d^4)*i^2*n + 72*(2*A^2*b^4*c^3*d - 3*A^2*a
*b^3*c^2*d^2 + A^2*a^3*b*d^4)*i^2)*x - 12*(12*(B^2*b^4*c*d^3 - B^2*a*b^3*d^
4)*i^2*n*x^3 - (9*B^2*b^4*c^4 - 16*B^2*a*b^3*c^3*d + 7*B^2*a^4*d^4)*i^2*n -
 12*(3*A*B*b^4*c^4 - 4*A*B*a*b^3*c^3*d + A*B*a^4*d^4)*i^2 - 6*((B^2*b^4*c^2
*d^2 - 8*B^2*a*b^3*c*d^3 + 7*B^2*a^2*b^2*d^4)*i^2*n + 12*(A*B*b^4*c^2*d^2 -
 2*A*B*a*b^3*c*d^3 + A*B*a^2*b^2*d^4)*i^2)*x^2 - 4*((5*B^2*b^4*c^3*d - 12*B
^2*a*b^3*c^2*d^2 + 7*B^2*a^3*b*d^4)*i^2*n + 12*(2*A*B*b^4*c^3*d - 3*A*B*a*b
^3*c^2*d^2 + A*B*a^3*b*d^4)*i^2)*x + 12*(B^2*b^4*d^4*i^2*n*x^4 + 4*B^2*a*b^
3*d^4*i^2*n*x^3 - 6*(B^2*b^4*c^2*d^2 - 2*B^2*a*b^3*c*d^3)*i^2*n*x^2 - 4*(2*
B^2*b^4*c^3*d - 3*B^2*a*b^3*c^2*d^2)*i^2*n*x - (3*B^2*b^4*c^4 - 4*B^2*a*b^3
*c^3*d)*i^2*n)*log((b*x + a)/(d*x + c)))*log(e) + 12*((9*B^2*b^4*c^4 - 16*B
^2*a*b^3*c^3*d)*i^2*n^2 - (7*B^2*b^4*d^4*i^2*n^2 + 12*A*B*b^4*d^4*i^2*n)*x^
4 + 12*(3*A*B*b^4*c^4 - 4*A*B*a*b^3*c^3*d)*i^2*n - 4*(12*A*B*a*b^3*d^4*i^2*
n + (3*B^2*b^4*c*d^3 + 4*B^2*a*b^3*d^4)*i^2*n^2)*x^3 + 6*((B^2*b^4*c^2*d^2
- 8*B^2*a*b^3*c*d^3)*i^2*n^2 + 12*(A*B*b^4*c^2*d^2 - 2*A*B*a*b^3*c*d^3)*i^2
*n)*x^2 + 4*((5*B^2*b^4*c^3*d - 12*B^2*a*b^3*c^2*d^2)*i^2*n^2 + 12*(2*A*B*b
^4*c^3*d - 3*A*B*a*b^3*c^2*d^2)*i^2*n)*x)*log((b*x + a)/(d*x + c)))/((b^9*c
^2 - 2*a*b^8*c*d + a^2*b^7*d^2)*g^5*x^4 + 4*(a*b^8*c^2 - 2*a^2*b^7*c*d + a^
3*b^6*d^2)*g^5*x^3 + 6*(a^2*b^7*c^2 - 2*a^3*b^6*c*d + a^4*b^5*d^2)*g^5*x^2
+ 4*(a^3*b^6*c^2 - 2*a^4*b^5*c*d + a^5*b^4*d^2)*g^5*x + (a^4*b^5*c^2 - 2*a^
5*b^4*c*d + a^6*b^3*d^2)*g^5)
```

giac [A] time = 163.53, size = 461, normalized size = 1.45

$$\frac{1}{864}\left(\frac{72\left(3\,B^2bn^2-\frac{4\,(bx+a)B^2dn^2}{dx+c}\right)\log\left(\frac{bx+a}{dx+c}\right)^2}{\frac{(bx+a)^4bcg^5}{(dx+c)^4}-\frac{(bx+a)^4adg^5}{(dx+c)^4}}+\frac{12\left(9\,B^2bn^2-\frac{16\,(bx+a)B^2dn^2}{dx+c}+36\,ABbn+36\,B^2bn-\frac{48\,(bx+a)ABdn}{dx+c}-\right.}{\frac{(bx+a)^4bcg^5}{(dx+c)^4}-\frac{(bx+a)^4adg^5}{(dx+c)^4}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5,x,
 algorithm="giac")
```

```
[Out] 1/864*(72*(3*B^2*b*n^2 - 4*(b*x + a)*B^2*d*n^2/(d*x + c))*log((b*x + a)/(d*
x + c))^2/((b*x + a)^4*b*c*g^5/(d*x + c)^4 - (b*x + a)^4*a*d*g^5/(d*x + c)^
4) + 12*(9*B^2*b*n^2 - 16*(b*x + a)*B^2*d*n^2/(d*x + c) + 36*A*B*b*n + 36*B
^2*b*n - 48*(b*x + a)*A*B*d*n/(d*x + c) - 48*(b*x + a)*B^2*d*n/(d*x + c))*l
og((b*x + a)/(d*x + c))/((b*x + a)^4*b*c*g^5/(d*x + c)^4 - (b*x + a)^4*a*d*
g^5/(d*x + c)^4) + (27*B^2*b*n^2 - 64*(b*x + a)*B^2*d*n^2/(d*x + c) + 108*A
*B*b*n + 108*B^2*b*n - 192*(b*x + a)*A*B*d*n/(d*x + c) - 192*(b*x + a)*B^2*
d*n/(d*x + c) + 216*A^2*b + 432*A*B*b + 216*B^2*b - 288*(b*x + a)*A^2*d/(d*
x + c) - 576*(b*x + a)*A*B*d/(d*x + c) - 288*(b*x + a)*B^2*d/(d*x + c))/((b
*x + a)^4*b*c*g^5/(d*x + c)^4 - (b*x + a)^4*a*d*g^5/(d*x + c)^4))*(b*c/(b*c
 - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^2\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{\left(bgx+ag\right)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^5,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^5,x)
```

maxima [B] time = 7.61, size = 8087, normalized size = 25.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^5,x,
 algorithm="maxima")
```

```
[Out] 1/24*A*B*c^2*i^2*n*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a^2*b
*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d - 5*a*
b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 -
a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a
^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 -
a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 -
 a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^
7*b*d^3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c
^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*c^4
- 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5)) -
1/72*A*B*d^2*i^2*n*((13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7
*a^5*d^3 - 12*(6*b^5*c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 6*(6*b^5*c^
3 - 46*a*b^4*c^2*d + 29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3)*x^2 + 4*(10*a*b^4*c^
3 - 63*a^2*b^3*c^2*d + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x)/((b^10*c^3 - 3*a*
b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2*b
^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^3*
b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a^4
*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*b^
5*c^2*d + 3*a^6*b^4*c*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b*c
*d^3 + a^2*d^4)*log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2
- 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a
^2*d^4)*log(d*x + c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*
b^4*c*d^3 + a^4*b^3*d^4)*g^5)) - 1/36*A*B*c*d*i^2*n*((7*a*b^3*c^3 - 33*a^2*
b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3 + 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3
- 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*
a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d
 + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d
+ 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3 + 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d
 + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*
d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x + (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d +
 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 12*(4*b*c*d^3 - a*d^4)*log(b*x + a)/
((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d
^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*x + c)/((b^6*c^4 - 4*a*b^5*c^3*d +
6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5)) - 1/6*(4*b*x + a)*
B^2*c*d*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^6*g^5*x^4 + 4*a*b^5
*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12*(6*b^2
*x^2 + 4*a*b*x + a^2)*B^2*d^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/
(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*
b^3*g^5) + 1/288*(12*n*((12*b^3*d^3*x^3 - 3*b^3*c^3 + 13*a*b^2*c^2*d - 23*a
^2*b*c*d^2 + 25*a^3*d^3 - 6*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 4*(b^3*c^2*d -
5*a*b^2*c*d^2 + 13*a^2*b*d^3)*x)/((b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^
2 - a^3*b^5*d^3)*g^5*x^4 + 4*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2
 - a^4*b^4*d^3)*g^5*x^3 + 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^
2 - a^5*b^3*d^3)*g^5*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d
^2 - a^6*b^2*d^3)*g^5*x + (a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2
- a^7*b*d^3)*g^5) + 12*d^4*log(b*x + a)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b
^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5) - 12*d^4*log(d*x + c)/((b^5*
c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*g^5)
```

)*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - (9*b^4*c^4 - 64*a*b^3*c^3*d + 21
6*a^2*b^2*c^2*d^2 - 576*a^3*b*c*d^3 + 415*a^4*d^4 - 300*(b^4*c*d^3 - a*b^3*
d^4)*x^3 + 6*(13*b^4*c^2*d^2 - 176*a*b^3*c*d^3 + 163*a^2*b^2*d^4)*x^2 + 72*
(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^
4)*log(b*x + a)^2 + 72*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 +
4*a^3*b*d^4*x + a^4*d^4)*log(d*x + c)^2 - 4*(7*b^4*c^3*d - 60*a*b^3*c^2*d^
2 + 324*a^2*b^2*c*d^3 - 271*a^3*b*d^4)*x - 300*(b^4*d^4*x^4 + 4*a*b^3*d^4*x
^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log(b*x + a) + 12*(25*b^4
*d^4*x^4 + 100*a*b^3*d^4*x^3 + 150*a^2*b^2*d^4*x^2 + 100*a^3*b*d^4*x + 25*a
^4*d^4 - 12*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^
4*x + a^4*d^4)*log(b*x + a))*log(d*x + c))*n^2/(a^4*b^5*c^4*g^5 - 4*a^5*b^4
*c^3*d*g^5 + 6*a^6*b^3*c^2*d^2*g^5 - 4*a^7*b^2*c*d^3*g^5 + a^8*b*d^4*g^5 +
(b^9*c^4*g^5 - 4*a*b^8*c^3*d*g^5 + 6*a^2*b^7*c^2*d^2*g^5 - 4*a^3*b^6*c*d^3*
g^5 + a^4*b^5*d^4*g^5)*x^4 + 4*(a*b^8*c^4*g^5 - 4*a^2*b^7*c^3*d*g^5 + 6*a^3
*b^6*c^2*d^2*g^5 - 4*a^4*b^5*c*d^3*g^5 + a^5*b^4*d^4*g^5)*x^3 + 6*(a^2*b^7*
c^4*g^5 - 4*a^3*b^6*c^3*d*g^5 + 6*a^4*b^5*c^2*d^2*g^5 - 4*a^5*b^4*c*d^3*g^5
+ a^6*b^3*d^4*g^5)*x^2 + 4*(a^3*b^6*c^4*g^5 - 4*a^4*b^5*c^3*d*g^5 + 6*a^5*
b^4*c^2*d^2*g^5 - 4*a^6*b^3*c*d^3*g^5 + a^7*b^2*d^4*g^5)*x))*B^2*c^2*i^2 -
1/432*(12*n*((7*a*b^3*c^3 - 33*a^2*b^2*c^2*d + 75*a^3*b*c*d^2 - 13*a^4*d^3
+ 12*(4*b^4*c*d^2 - a*b^3*d^3)*x^3 - 6*(4*b^4*c^2*d - 29*a*b^3*c*d^2 + 7*a^
2*b^2*d^3)*x^2 + 4*(4*b^4*c^3 - 21*a*b^3*c^2*d + 57*a^2*b^2*c*d^2 - 13*a^3*
b*d^3)*x)/((b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*c*d^2 - a^3*b^6*d^3)*g^5*x^
4 + 4*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3*b^6*c*d^2 - a^4*b^5*d^3)*g^5*x^3
+ 6*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*g^5*x^
2 + 4*(a^3*b^6*c^3 - 3*a^4*b^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*g^5*x
+ (a^4*b^5*c^3 - 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*g^5) + 1
2*(4*b*c*d^3 - a*d^4)*log(b*x + a)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^
2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*g^5) - 12*(4*b*c*d^3 - a*d^4)*log(d*
x + c)/((b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^
4*b^2*d^4)*g^5))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (37*a*b^4*c^4 - 3
04*a^2*b^3*c^3*d + 1512*a^3*b^2*c^2*d^2 - 1360*a^4*b*c*d^3 + 115*a^5*d^4 +
12*(88*b^5*c^2*d^2 - 101*a*b^4*c*d^3 + 13*a^2*b^3*d^4)*x^3 - 6*(40*b^5*c^3*
d - 609*a*b^4*c^2*d^2 + 648*a^2*b^3*c*d^3 - 79*a^3*b^2*d^4)*x^2 - 72*(4*a^4
*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2
*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3
- a^4*b*d^4)*x)*log(b*x + a)^2 - 72*(4*a^4*b*c*d^3 - a^5*d^4 + (4*b^5*c*d^3
- a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3 + 6*(4*a^2*b^3*c*d^
3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*x)*log(d*x + c)^2 +
4*(16*b^5*c^4 - 163*a*b^4*c^3*d + 1068*a^2*b^3*c^2*d^2 - 1036*a^3*b^2*c*d^3
+ 115*a^4*b*d^4)*x + 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13*
a*b^4*d^4)*x^4 + 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c*
d^3 - 13*a^3*b^2*d^4)*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x)*log(b*x
+ a) - 12*(88*a^4*b*c*d^3 - 13*a^5*d^4 + (88*b^5*c*d^3 - 13*a*b^4*d^4)*x^4
+ 4*(88*a*b^4*c*d^3 - 13*a^2*b^3*d^4)*x^3 + 6*(88*a^2*b^3*c*d^3 - 13*a^3*b^
2*d^4)*x^2 + 4*(88*a^3*b^2*c*d^3 - 13*a^4*b*d^4)*x - 12*(4*a^4*b*c*d^3 - a^
5*d^4 + (4*b^5*c*d^3 - a*b^4*d^4)*x^4 + 4*(4*a*b^4*c*d^3 - a^2*b^3*d^4)*x^3
+ 6*(4*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^2 + 4*(4*a^3*b^2*c*d^3 - a^4*b*d^4)*
x)*log(b*x + a))*log(d*x + c))*n^2/(a^4*b^6*c^4*g^5 - 4*a^5*b^5*c^3*d*g^5 +
6*a^6*b^4*c^2*d^2*g^5 - 4*a^7*b^3*c*d^3*g^5 + a^8*b^2*d^4*g^5 + (b^10*c^4*
g^5 - 4*a*b^9*c^3*d*g^5 + 6*a^2*b^8*c^2*d^2*g^5 - 4*a^3*b^7*c*d^3*g^5 + a^4
*b^6*d^4*g^5)*x^4 + 4*(a*b^9*c^4*g^5 - 4*a^2*b^8*c^3*d*g^5 + 6*a^3*b^7*c^2*
d^2*g^5 - 4*a^4*b^6*c*d^3*g^5 + a^5*b^5*d^4*g^5)*x^3 + 6*(a^2*b^8*c^4*g^5 -
4*a^3*b^7*c^3*d*g^5 + 6*a^4*b^6*c^2*d^2*g^5 - 4*a^5*b^5*c*d^3*g^5 + a^6*b^
4*d^4*g^5)*x^2 + 4*(a^3*b^7*c^4*g^5 - 4*a^4*b^6*c^3*d*g^5 + 6*a^5*b^5*c^2*d
^2*g^5 - 4*a^6*b^4*c*d^3*g^5 + a^7*b^3*d^4*g^5)*x))*B^2*c*d*i^2 - 1/864*(12
n((13*a^2*b^3*c^3 - 75*a^3*b^2*c^2*d + 33*a^4*b*c*d^2 - 7*a^5*d^3 - 12*(6
*b^5*c^2*d - 4*a*b^4*c*d^2 + a^2*b^3*d^3)*x^3 + 6*(6*b^5*c^3 - 46*a*b^4*c^2
*d + 29*a^2*b^3*c*d^2 - 7*a^3*b^2*d^3)*x^2 + 4*(10*a*b^4*c^3 - 63*a^2*b^3*c
^2*d + 33*a^3*b^2*c*d^2 - 7*a^4*b*d^3)*x)/((b^10*c^3 - 3*a*b^9*c^2*d + 3*a^

```
2*b^8*c*d^2 - a^3*b^7*d^3)*g^5*x^4 + 4*(a*b^9*c^3 - 3*a^2*b^8*c^2*d + 3*a^3
*b^7*c*d^2 - a^4*b^6*d^3)*g^5*x^3 + 6*(a^2*b^8*c^3 - 3*a^3*b^7*c^2*d + 3*a^
4*b^6*c*d^2 - a^5*b^5*d^3)*g^5*x^2 + 4*(a^3*b^7*c^3 - 3*a^4*b^6*c^2*d + 3*a
^5*b^5*c*d^2 - a^6*b^4*d^3)*g^5*x + (a^4*b^6*c^3 - 3*a^5*b^5*c^2*d + 3*a^6*
b^4*c*d^2 - a^7*b^3*d^3)*g^5) - 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*
log(b*x + a)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^
3 + a^4*b^3*d^4)*g^5) + 12*(6*b^2*c^2*d^2 - 4*a*b*c*d^3 + a^2*d^4)*log(d*x
+ c)/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*
b^3*d^4)*g^5))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (115*a^2*b^4*c^4 -
1360*a^3*b^3*c^3*d + 1512*a^4*b^2*c^2*d^2 - 304*a^5*b*c*d^3 + 37*a^6*d^4 -
12*(108*b^6*c^3*d - 148*a*b^5*c^2*d^2 + 47*a^2*b^4*c*d^3 - 7*a^3*b^3*d^4)*x
^3 + 6*(36*b^6*c^4 - 712*a*b^5*c^3*d + 903*a^2*b^4*c^2*d^2 - 264*a^3*b^3*c*
d^3 + 37*a^4*b^2*d^4)*x^2 + 72*(6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4
 + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 -
 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^
3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*
x)*log(b*x + a)^2 + 72*(6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^
6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b
^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*
b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^4*b^2*c*d^3 + a^5*b*d^4)*x)*log(d
*x + c)^2 + 4*(76*a*b^5*c^4 - 1057*a^2*b^4*c^3*d + 1248*a^3*b^3*c^2*d^2 - 3
04*a^4*b^2*c*d^3 + 37*a^5*b*d^4)*x - 12*(108*a^4*b^2*c^2*d^2 - 40*a^5*b*c*d
^3 + 7*a^6*d^4 + (108*b^6*c^2*d^2 - 40*a*b^5*c*d^3 + 7*a^2*b^4*d^4)*x^4 + 4
*(108*a*b^5*c^2*d^2 - 40*a^2*b^4*c*d^3 + 7*a^3*b^3*d^4)*x^3 + 6*(108*a^2*b^
4*c^2*d^2 - 40*a^3*b^3*c*d^3 + 7*a^4*b^2*d^4)*x^2 + 4*(108*a^3*b^3*c^2*d^2
- 40*a^4*b^2*c*d^3 + 7*a^5*b*d^4)*x)*log(b*x + a) + 12*(108*a^4*b^2*c^2*d^2
 - 40*a^5*b*c*d^3 + 7*a^6*d^4 + (108*b^6*c^2*d^2 - 40*a*b^5*c*d^3 + 7*a^2*b
^4*d^4)*x^4 + 4*(108*a*b^5*c^2*d^2 - 40*a^2*b^4*c*d^3 + 7*a^3*b^3*d^4)*x^3
+ 6*(108*a^2*b^4*c^2*d^2 - 40*a^3*b^3*c*d^3 + 7*a^4*b^2*d^4)*x^2 + 4*(108*a
^3*b^3*c^2*d^2 - 40*a^4*b^2*c*d^3 + 7*a^5*b*d^4)*x - 12*(6*a^4*b^2*c^2*d^2
- 4*a^5*b*c*d^3 + a^6*d^4 + (6*b^6*c^2*d^2 - 4*a*b^5*c*d^3 + a^2*b^4*d^4)*x
^4 + 4*(6*a*b^5*c^2*d^2 - 4*a^2*b^4*c*d^3 + a^3*b^3*d^4)*x^3 + 6*(6*a^2*b^4
*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*x^2 + 4*(6*a^3*b^3*c^2*d^2 - 4*a^
4*b^2*c*d^3 + a^5*b*d^4)*x)*log(b*x + a))*log(d*x + c))*n^2/(a^4*b^7*c^4*g^
5 - 4*a^5*b^6*c^3*d*g^5 + 6*a^6*b^5*c^2*d^2*g^5 - 4*a^7*b^4*c*d^3*g^5 + a^8
*b^3*d^4*g^5 + (b^11*c^4*g^5 - 4*a*b^10*c^3*d*g^5 + 6*a^2*b^9*c^2*d^2*g^5 -
 4*a^3*b^8*c*d^3*g^5 + a^4*b^7*d^4*g^5)*x^4 + 4*(a*b^10*c^4*g^5 - 4*a^2*b^9
*c^3*d*g^5 + 6*a^3*b^8*c^2*d^2*g^5 - 4*a^4*b^7*c*d^3*g^5 + a^5*b^6*d^4*g^5)
*x^3 + 6*(a^2*b^9*c^4*g^5 - 4*a^3*b^8*c^3*d*g^5 + 6*a^4*b^7*c^2*d^2*g^5 - 4
*a^5*b^6*c*d^3*g^5 + a^6*b^5*d^4*g^5)*x^2 + 4*(a^3*b^8*c^4*g^5 - 4*a^4*b^7*
c^3*d*g^5 + 6*a^5*b^6*c^2*d^2*g^5 - 4*a^6*b^5*c*d^3*g^5 + a^7*b^4*d^4*g^5)*
x))*B^2*d^2*i^2 - 1/3*(4*b*x + a)*A*B*c*d*i^2*log(e*(b*x/(d*x + c) + a/(d*x
 + c))^n)/(b^6*g^5*x^4 + 4*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^
5*x + a^4*b^2*g^5) - 1/6*(6*b^2*x^2 + 4*a*b*x + a^2)*A*B*d^2*i^2*log(e*(b*x
/(d*x + c) + a/(d*x + c))^n)/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*a^2*b^5*g^5
*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/4*B^2*c^2*i^2*log(e*(b*x/(d*x + c
) + a/(d*x + c))^n)^2/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 +
4*a^3*b^2*g^5*x + a^4*b*g^5) - 1/6*(4*b*x + a)*A^2*c*d*i^2/(b^6*g^5*x^4 + 4
*a*b^5*g^5*x^3 + 6*a^2*b^4*g^5*x^2 + 4*a^3*b^3*g^5*x + a^4*b^2*g^5) - 1/12*
(6*b^2*x^2 + 4*a*b*x + a^2)*A^2*d^2*i^2/(b^7*g^5*x^4 + 4*a*b^6*g^5*x^3 + 6*
a^2*b^5*g^5*x^2 + 4*a^3*b^4*g^5*x + a^4*b^3*g^5) - 1/2*A*B*c^2*i^2*log(e*(b
*x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^5*x^4 + 4*a*b^4*g^5*x^3 + 6*a^2*b^3*g
^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5) - 1/4*A^2*c^2*i^2/(b^5*g^5*x^4 + 4*a*
b^4*g^5*x^3 + 6*a^2*b^3*g^5*x^2 + 4*a^3*b^2*g^5*x + a^4*b*g^5)
```

mupad [B] time = 9.42, size = 1934, normalized size = 6.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^5,x)
```

```
[Out] - log(e*((a + b*x)/(c + d*x))^n)*((a*(A*B*a*d^2*i^2 - (B^2*a*d^2*i^2*n)/2 +
 (B^2*b*c*d*i^2*n)/2 + 2*A*B*b*c*d*i^2) + x*(b*(A*B*a*d^2*i^2 - (B^2*a*d^2*
i^2*n)/2 + (B^2*b*c*d*i^2*n)/2 + 2*A*B*b*c*d*i^2) + 3*A*B*a*b*d^2*i^2 + 6*A
*B*b^2*c*d*i^2 - (3*B^2*a*b*d^2*i^2*n)/2 + (3*B^2*b^2*c*d*i^2*n)/2) + 3*A*B
*b^2*c^2*i^2 - B^2*a^2*d^2*i^2*n + (B^2*b^2*c^2*i^2*n)/2 + 6*A*B*b^2*d^2*i^
2*x^2 + (B^2*a*b*c*d*i^2*n)/2)/(6*a^4*b^3*g^5 + 6*b^7*g^5*x^4 + 24*a^3*b^4*
g^5*x + 24*a*b^6*g^5*x^3 + 36*a^2*b^5*g^5*x^2) + (B^2*d^4*i^2*(x^2*(b*(b*((
3*a*b^3*g^5*n*(a*d - b*c))/(2*d) + (b^3*g^5*n*(a*d - b*c)*(4*a*d - b*c))/(2
*d^2)) + (3*a*b^4*g^5*n*(a*d - b*c))/d + (b^4*g^5*n*(a*d - b*c)*(4*a*d - b*
c))/d^2) + (9*a*b^5*g^5*n*(a*d - b*c))/(2*d) + (3*b^5*g^5*n*(a*d - b*c)*(4*
a*d - b*c))/(2*d^2)) + a*(a*((3*a*b^3*g^5*n*(a*d - b*c))/(2*d) + (b^3*g^5*n
*(a*d - b*c)*(4*a*d - b*c))/(2*d^2)) + (b^3*g^5*n*(a*d - b*c)*(6*a^2*d^2 +
b^2*c^2 - 4*a*b*c*d))/(2*d^3)) + x*(a*(b*((3*a*b^3*g^5*n*(a*d - b*c))/(2*d)
 + (b^3*g^5*n*(a*d - b*c)*(4*a*d - b*c))/(2*d^2)) + (3*a*b^4*g^5*n*(a*d - b
*c))/d + (b^4*g^5*n*(a*d - b*c)*(4*a*d - b*c))/d^2) + b*(a*((3*a*b^3*g^5*n*
(a*d - b*c))/(2*d) + (b^3*g^5*n*(a*d - b*c)*(4*a*d - b*c))/(2*d^2)) + (b^3*
g^5*n*(a*d - b*c)*(6*a^2*d^2 + b^2*c^2 - 4*a*b*c*d))/(2*d^3)) + (3*b^4*g^5*
n*(a*d - b*c)*(6*a^2*d^2 + b^2*c^2 - 4*a*b*c*d))/(2*d^3)) + (3*b^3*g^5*n*(a
*d - b*c)*(4*a^3*d^3 - b^3*c^3 + 4*a*b^2*c^2*d - 6*a^2*b*c*d^2))/(2*d^4) +
(6*b^6*g^5*n*x^3*(a*d - b*c))/d))/(6*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d
)*(6*a^4*b^3*g^5 + 6*b^7*g^5*x^4 + 24*a^3*b^4*g^5*x + 24*a*b^6*g^5*x^3 + 36
*a^2*b^5*g^5*x^2))) - ((72*A^2*a^3*d^3*i^2 - 216*A^2*b^3*c^3*i^2 + 37*B^2*a
^3*d^3*i^2*n^2 - 27*B^2*b^3*c^3*i^2*n^2 + 72*A^2*a*b^2*c^2*d*i^2 + 72*A^2*a
^2*b*c*d^2*i^2 + 84*A*B*a^3*d^3*i^2*n - 108*A*B*b^3*c^3*i^2*n + 37*B^2*a*b^
2*c^2*d*i^2*n^2 + 37*B^2*a^2*b*c*d^2*i^2*n^2 + 84*A*B*a*b^2*c^2*d*i^2*n + 8
4*A*B*a^2*b*c*d^2*i^2*n)/(12*(a*d - b*c)) + (x^3*(7*B^2*b^3*d^3*i^2*n^2 + 1
2*A*B*b^3*d^3*i^2*n))/(a*d - b*c) + (x*(72*A^2*a^2*b*d^3*i^2 - 144*A^2*b^3*
c^2*d*i^2 + 72*A^2*a*b^2*c*d^2*i^2 + 37*B^2*a^2*b*d^3*i^2*n^2 - 11*B^2*b^3*
c^2*d*i^2*n^2 - 60*A*B*b^3*c^2*d*i^2*n + 37*B^2*a*b^2*c*d^2*i^2*n^2 + 84*A*
B*a^2*b*d^3*i^2*n + 84*A*B*a*b^2*c*d^2*i^2*n))/(3*(a*d - b*c)) + (x^2*(72*A
^2*a*b^2*d^3*i^2 - 72*A^2*b^3*c*d^2*i^2 + 37*B^2*a*b^2*d^3*i^2*n^2 + 5*B^2*
b^3*c*d^2*i^2*n^2 - 12*A*B*b^3*c*d^2*i^2*n + 84*A*B*a*b^2*d^3*i^2*n))/(2*(a
*d - b*c)))/(72*a^4*b^3*g^5 + 72*b^7*g^5*x^4 + 288*a^3*b^4*g^5*x + 288*a*b^
6*g^5*x^3 + 432*a^2*b^5*g^5*x^2) - log(e*((a + b*x)/(c + d*x))^n)^2*((a*((B
^2*c*d*i^2)/(6*b^2) + (B^2*a*d^2*i^2)/(12*b^3)) + x*(b*((B^2*c*d*i^2)/(6*b^
2) + (B^2*a*d^2*i^2)/(12*b^3)) + (B^2*c*d*i^2)/(2*b) + (B^2*a*d^2*i^2)/(4*b
^2)) + (B^2*c^2*i^2)/(4*b) + (B^2*d^2*i^2*x^2)/(2*b))/(a^4*g^5 + b^4*g^5*x^
4 + 4*a*b^3*g^5*x^3 + 6*a^2*b^2*g^5*x^2 + 4*a^3*b*g^5*x) - (B^2*d^4*i^2)/(1
2*b^3*g^5*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - (B*d^4*i^2*n*atan(((2*b*d*x -
 (72*b^5*c^2*g^5 - 72*a^2*b^3*d^2*g^5)/(72*b^3*g^5*(a*d - b*c)))*1i)/(a*d -
 b*c))*(12*A + 7*B*n)*1i)/(36*b^3*g^5*(a*d - b*c)^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**5
,x)
```

```
[Out] Timed out
```

3.177 $\int \frac{(ci+dix)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^6}\,dx$

Optimal. Leaf size=493

$$-\frac{b^2i^2(c+dx)^5\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{5g^6(a+bx)^5(bc-ad)^3}-\frac{2b^2Bi^2n(c+dx)^5\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{25g^6(a+bx)^5(bc-ad)^3}-\frac{d^2i^2(c+dx)^3\left(B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{3g^6(a+bx)^3(bc-}$$

```
[Out] -2/27*B^2*d^2*i^2*n^2*(d*x+c)^3/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/16*b*B^2*d*i^2
*n^2*(d*x+c)^4/(-a*d+b*c)^3/g^6/(b*x+a)^4-2/125*b^2*B^2*i^2*n^2*(d*x+c)^5/(
-a*d+b*c)^3/g^6/(b*x+a)^5-2/9*B*d^2*i^2*n*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x
+c))^n))/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/4*b*B*d*i^2*n*(d*x+c)^4*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^6/(b*x+a)^4-2/25*b^2*B*i^2*n*(d*x+c)^5*(A
+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^6/(b*x+a)^5-1/3*d^2*i^2*(d*x+c
)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^6/(b*x+a)^3+1/2*b*d*i^
2*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^6/(b*x+a)^4-1/
5*b^2*i^2*(d*x+c)^5*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^6/(b*x
+a)^5
```

Rubi [C] time = 4.32, antiderivative size = 1085, normalized size of antiderivative = 2.20, number of steps used = 110, number of rules used = 11, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.244, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391}

$$\frac{B^2i^2n^2\log^2(a+bx)d^5}{30b^3(bc-ad)^3g^6}+\frac{B^2i^2n^2\log^2(c+dx)d^5}{30b^3(bc-ad)^3g^6}-\frac{47B^2i^2n^2\log(a+bx)d^5}{900b^3(bc-ad)^3g^6}-\frac{Bi^2n\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{15b^3(bc-ad)^3g^6}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x
)^6,x]
```

```
[Out] (-2*B^2*(b*c - a*d)^2*i^2*n^2)/(125*b^3*g^6*(a + b*x)^5) - (7*B^2*d*(b*c -
a*d)*i^2*n^2)/(400*b^3*g^6*(a + b*x)^4) + (43*B^2*d^2*i^2*n^2)/(2700*b^3*g^
6*(a + b*x)^3) - (13*B^2*d^3*i^2*n^2)/(1800*b^3*(b*c - a*d)*g^6*(a + b*x)^2
) - (47*B^2*d^4*i^2*n^2)/(900*b^3*(b*c - a*d)^2*g^6*(a + b*x)) - (47*B^2*d^
5*i^2*n^2*Log[a + b*x])/(900*b^3*(b*c - a*d)^3*g^6) + (B^2*d^5*i^2*n^2*Log[
a + b*x]^2)/(30*b^3*(b*c - a*d)^3*g^6) - (2*B*(b*c - a*d)^2*i^2*n*(A + B*Lo
g[e*((a + b*x)/(c + d*x))^n]))/(25*b^3*g^6*(a + b*x)^5) - (3*B*d*(b*c - a*d
)*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(20*b^3*g^6*(a + b*x)^4) -
(B*d^2*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(45*b^3*g^6*(a + b*x)^
3) + (B*d^3*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(30*b^3*(b*c - a*
d)*g^6*(a + b*x)^2) - (B*d^4*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/
(15*b^3*(b*c - a*d)^2*g^6*(a + b*x)) - (B*d^5*i^2*n*Log[a + b*x]*(A + B*Log
[e*((a + b*x)/(c + d*x))^n]))/(15*b^3*(b*c - a*d)^3*g^6) - ((b*c - a*d)^2*i
^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(5*b^3*g^6*(a + b*x)^5) - (d*(
b*c - a*d)*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^3*g^6*(a + b*
x)^4) - (d^2*i^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*b^3*g^6*(a +
b*x)^3) + (47*B^2*d^5*i^2*n^2*Log[c + d*x])/(900*b^3*(b*c - a*d)^3*g^6) - (
B^2*d^5*i^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(15*b^3*(b*
c - a*d)^3*g^6) + (B*d^5*i^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c
 + d*x])/(15*b^3*(b*c - a*d)^3*g^6) + (B^2*d^5*i^2*n^2*Log[c + d*x]^2)/(30*
b^3*(b*c - a*d)^3*g^6) - (B^2*d^5*i^2*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b
*c - a*d)])/(15*b^3*(b*c - a*d)^3*g^6) - (B^2*d^5*i^2*n^2*PolyLog[2, -((d*(
a + b*x))/(b*c - a*d))])/(15*b^3*(b*c - a*d)^3*g^6) - (B^2*d^5*i^2*n^2*Poly
Log[2, (b*(c + d*x))/(b*c - a*d)])/(15*b^3*(b*c - a*d)^3*g^6)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(177c+177dx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^6}\,dx = \int \left(\frac{31329(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^2g^6(a+bx)^6} + \frac{62658d(bc-\ldots}{\ldots}\right.$$

$$= \frac{\left(31329d^2\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(a+bx)^4}dx}{b^2g^6} + \frac{(62658d(bc-ad))\int \frac{\left(A+\ldots\right.}{\ldots}}{b^2g^6}$$

$$= -\frac{31329(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{5b^3g^6(a+bx)^5} - \frac{31329d(bc-ad\ldots}{2b\ldots}$$

$$= -\frac{31329(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{5b^3g^6(a+bx)^5} - \frac{31329d(bc-ad\ldots}{2b\ldots}$$

$$= -\frac{31329(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{5b^3g^6(a+bx)^5} - \frac{31329d(bc-ad\ldots}{2b\ldots}$$

$$= -\frac{31329(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{5b^3g^6(a+bx)^5} - \frac{31329d(bc-ad\ldots}{2b\ldots}$$

$$= -\frac{62658B(bc-ad)^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{25b^3g^6(a+bx)^5} - \frac{93987Bd(bc-\ldots}{\ldots}$$

$$= -\frac{62658B(bc-ad)^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{25b^3g^6(a+bx)^5} - \frac{93987Bd(bc-\ldots}{\ldots}$$

$$= -\frac{62658B(bc-ad)^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{25b^3g^6(a+bx)^5} - \frac{93987Bd(bc-\ldots}{\ldots}$$

$$= -\frac{62658B^2(bc-ad)^2n^2}{125b^3g^6(a+bx)^5} - \frac{219303B^2d(bc-ad)n^2}{400b^3g^6(a+bx)^4} + \frac{149683B\ldots}{300b^3g^6(a\ldots}$$

$$= -\frac{62658B^2(bc-ad)^2n^2}{125b^3g^6(a+bx)^5} - \frac{219303B^2d(bc-ad)n^2}{400b^3g^6(a+bx)^4} + \frac{149683B\ldots}{300b^3g^6(a\ldots}$$

$$= -\frac{62658B^2(bc-ad)^2n^2}{125b^3g^6(a+bx)^5} - \frac{219303B^2d(bc-ad)n^2}{400b^3g^6(a+bx)^4} + \frac{149683B\ldots}{300b^3g^6(a\ldots}$$

Mathematica [C] time = 3.92, size = 2320, normalized size = 4.71

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g +
 b*g*x)^6,x]
```

```
[Out] -1/54000*(i^2*(10800*(b*c - a*d)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2
 + 27000*d*(b*c - a*d)^4*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2
 - 18000*d^2*(-(b*c) + a*d)^3*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n])^2 + 1000*B*d^2*n*(a + b*x)^2*(12*(b*c - a*d)^3*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]) - 18*d*(b*c - a*d)^2*(a + b*x)*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n]) + 36*d^2*(b*c - a*d)*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d
*x))^n]) + 36*d^3*(a + b*x)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x
))^n]) - 36*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c +
d*x] + 36*B*d^2*n*(a + b*x)^2*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a
+ b*x)*Log[c + d*x]) - 9*B*d*n*(a + b*x)*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d
)*(a + b*x) - 2*d^2*(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*
x]) + 2*B*n*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a
*d)*(a + b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c
+ d*x]) - 18*B*d^3*n*(a + b*x)^3*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c
+ d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 18*B*
d^3*n*(a + b*x)^3*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log
[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) + 375*B*d*n*(a + b*x)
*(36*(b*c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 48*d*(-(b*c) +
a*d)^3*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 72*d^2*(b*c - a*d
)^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 144*d^3*(-(b*c) +
a*d)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 144*d^4*(a + b*x)
^4*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 144*d^4*(a + b*x)^
4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 144*B*d^3*n*(a + b*
x)^3*(b*c - a*d + d*(a + b*x)*Log[a + b*x] - d*(a + b*x)*Log[c + d*x]) + 36
*B*d^2*n*(a + b*x)^2*((b*c - a*d)^2 + 2*d*(-(b*c) + a*d)*(a + b*x) - 2*d^2*
(a + b*x)^2*Log[a + b*x] + 2*d^2*(a + b*x)^2*Log[c + d*x]) - 8*B*d*n*(a + b
*x)*(2*(b*c - a*d)^3 - 3*d*(b*c - a*d)^2*(a + b*x) + 6*d^2*(b*c - a*d)*(a +
 b*x)^2 + 6*d^3*(a + b*x)^3*Log[a + b*x] - 6*d^3*(a + b*x)^3*Log[c + d*x])
+ 3*B*n*(3*(b*c - a*d)^4 + 4*d*(-(b*c) + a*d)^3*(a + b*x) + 6*d^2*(b*c - a*
d)^2*(a + b*x)^2 + 12*d^3*(-(b*c) + a*d)*(a + b*x)^3 - 12*d^4*(a + b*x)^4*L
og[a + b*x] + 12*d^4*(a + b*x)^4*Log[c + d*x]) + 72*B*d^4*n*(a + b*x)^4*(Lo
g[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2,
 (d*(a + b*x))/(-(b*c) + a*d)]) - 72*B*d^4*n*(a + b*x)^4*((2*Log[(d*(a + b*
x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x
))/(b*c - a*d)])) + 6*B*n*(-225*a*B*d*(b*c - a*d)^4*n + 144*B*(b*c - a*d)^5
*n - 225*b*B*d*(b*c - a*d)^4*n*x + 300*a*B*d^2*(b*c - a*d)^3*n*(a + b*x) -
180*B*d*(b*c - a*d)^4*n*(a + b*x) + 300*b*B*d^2*(b*c - a*d)^3*n*x*(a + b*x)
 - 450*a*B*d^3*(b*c - a*d)^2*n*(a + b*x)^2 + 640*B*d^2*(b*c - a*d)^3*n*(a +
 b*x)^2 - 450*b*B*d^3*(b*c - a*d)^2*n*x*(a + b*x)^2 + 900*a*B*d^4*(b*c - a*
d)*n*(a + b*x)^3 - 1860*B*d^3*(b*c - a*d)^2*n*(a + b*x)^3 + 900*b*B*d^4*(b*
c - a*d)*n*x*(a + b*x)^3 + 3600*b*B*c*d^4*n*(a + b*x)^4 - 3600*a*B*d^5*n*(a
 + b*x)^4 + 3720*B*d^4*(b*c - a*d)*n*(a + b*x)^4 + 900*a*B*d^5*n*(a + b*x)^
4*Log[a + b*x] + 900*b*B*d^5*n*x*(a + b*x)^4*Log[a + b*x] + 7320*B*d^5*n*(a
 + b*x)^5*Log[a + b*x] + 720*(b*c - a*d)^5*(A + B*Log[e*((a + b*x)/(c + d*x
))^n]) - 900*d*(b*c - a*d)^4*(a + b*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n
]) + 1200*d^2*(b*c - a*d)^3*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]) - 1800*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))
^n]) + 3600*d^4*(b*c - a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]) + 3600*d^5*(a + b*x)^5*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]) - 900*a*B*d^5*n*(a + b*x)^4*Log[c + d*x] - 900*b*B*d^5*n*x*(a + b*x)^4*
Log[c + d*x] - 7320*B*d^5*n*(a + b*x)^5*Log[c + d*x] - 3600*d^5*(a + b*x)^5
*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 1800*B*d^5*n*(a + b*
x)^5*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*Po
lyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 1800*B*d^5*n*(a + b*x)^5*((2*Log[
(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (
b*(c + d*x))/(b*c - a*d)])))))/(b^3*(b*c - a*d)^3*g^6*(a + b*x)^5)
```

fricas [B] time = 1.19, size = 2633, normalized size = 5.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^6,x,
 algorithm="fricas")
```

```
[Out] -1/54000*((864*B^2*b^5*c^5 - 3375*B^2*a*b^4*c^4*d + 4000*B^2*a^2*b^3*c^3*d^
2 - 1489*B^2*a^5*d^5)*i^2*n^2 + 60*(47*(B^2*b^5*c*d^4 - B^2*a*b^4*d^5)*i^2*
n^2 + 60*(A*B*b^5*c*d^4 - A*B*a*b^4*d^5)*i^2*n)*x^4 + 60*(72*A*B*b^5*c^5 -
225*A*B*a*b^4*c^4*d + 200*A*B*a^2*b^3*c^3*d^2 - 47*A*B*a^5*d^5)*i^2*n + 30*
((13*B^2*b^5*c^2*d^3 + 350*B^2*a*b^4*c*d^4 - 363*B^2*a^2*b^3*d^5)*i^2*n^2 -
 60*(A*B*b^5*c^2*d^3 - 10*A*B*a*b^4*c*d^4 + 9*A*B*a^2*b^3*d^5)*i^2*n)*x^3 +
 1800*(6*A^2*b^5*c^5 - 15*A^2*a*b^4*c^4*d + 10*A^2*a^2*b^3*c^3*d^2 - A^2*a^
5*d^5)*i^2 - 10*((86*B^2*b^5*c^3*d^2 - 375*B^2*a*b^4*c^2*d^3 - 1200*B^2*a^2
*b^3*c*d^4 + 1489*B^2*a^3*b^2*d^5)*i^2*n^2 - 60*(2*A*B*b^5*c^3*d^2 - 15*A*B
*a*b^4*c^2*d^3 + 60*A*B*a^2*b^3*c*d^4 - 47*A*B*a^3*b^2*d^5)*i^2*n - 1800*(A
^2*b^5*c^3*d^2 - 3*A^2*a*b^4*c^2*d^3 + 3*A^2*a^2*b^3*c*d^4 - A^2*a^3*b^2*d^
5)*i^2)*x^2 + 1800*(10*(B^2*b^5*c^3*d^2 - 3*B^2*a*b^4*c^2*d^3 + 3*B^2*a^2*b
^3*c*d^4 - B^2*a^3*b^2*d^5)*i^2*x^2 + 5*(3*B^2*b^5*c^4*d - 8*B^2*a*b^4*c^3*
d^2 + 6*B^2*a^2*b^3*c^2*d^3 - B^2*a^4*b*d^5)*i^2*x + (6*B^2*b^5*c^5 - 15*B^
2*a*b^4*c^4*d + 10*B^2*a^2*b^3*c^3*d^2 - B^2*a^5*d^5)*i^2)*log(e)^2 + 1800*
(B^2*b^5*d^5*i^2*n^2*x^5 + 5*B^2*a*b^4*d^5*i^2*n^2*x^4 + 10*B^2*a^2*b^3*d^5
*i^2*n^2*x^3 + 10*(B^2*b^5*c^3*d^2 - 3*B^2*a*b^4*c^2*d^3 + 3*B^2*a^2*b^3*c*
d^4)*i^2*n^2*x^2 + 5*(3*B^2*b^5*c^4*d - 8*B^2*a*b^4*c^3*d^2 + 6*B^2*a^2*b^3
*c^2*d^3)*i^2*n^2*x + (6*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 10*B^2*a^2*b^3*
c^3*d^2)*i^2*n^2)*log((b*x + a)/(d*x + c))^2 + 5*((189*B^2*b^5*c^4*d - 1100
*B^2*a*b^4*c^3*d^2 + 2400*B^2*a^2*b^3*c^2*d^3 - 1489*B^2*a^4*b*d^5)*i^2*n^2
 + 60*(27*A*B*b^5*c^4*d - 100*A*B*a*b^4*c^3*d^2 + 120*A*B*a^2*b^3*c^2*d^3 -
 47*A*B*a^4*b*d^5)*i^2*n + 1800*(3*A^2*b^5*c^4*d - 8*A^2*a*b^4*c^3*d^2 + 6*
A^2*a^2*b^3*c^2*d^3 - A^2*a^4*b*d^5)*i^2)*x + 60*(60*(B^2*b^5*c*d^4 - B^2*a
*b^4*d^5)*i^2*n*x^4 - 30*(B^2*b^5*c^2*d^3 - 10*B^2*a*b^4*c*d^4 + 9*B^2*a^2*
b^3*d^5)*i^2*n*x^3 + (72*B^2*b^5*c^5 - 225*B^2*a*b^4*c^4*d + 200*B^2*a^2*b^
3*c^3*d^2 - 47*B^2*a^5*d^5)*i^2*n + 60*(6*A*B*b^5*c^5 - 15*A*B*a*b^4*c^4*d
+ 10*A*B*a^2*b^3*c^3*d^2 - A*B*a^5*d^5)*i^2 + 10*((2*B^2*b^5*c^3*d^2 - 15*B
^2*a*b^4*c^2*d^3 + 60*B^2*a^2*b^3*c*d^4 - 47*B^2*a^3*b^2*d^5)*i^2*n + 60*(A
*B*b^5*c^3*d^2 - 3*A*B*a*b^4*c^2*d^3 + 3*A*B*a^2*b^3*c*d^4 - A*B*a^3*b^2*d^
5)*i^2)*x^2 + 5*((27*B^2*b^5*c^4*d - 100*B^2*a*b^4*c^3*d^2 + 120*B^2*a^2*b^
3*c^2*d^3 - 47*B^2*a^4*b*d^5)*i^2*n + 60*(3*A*B*b^5*c^4*d - 8*A*B*a*b^4*c^3
*d^2 + 6*A*B*a^2*b^3*c^2*d^3 - A*B*a^4*b*d^5)*i^2)*x + 60*(B^2*b^5*d^5*i^2*
n*x^5 + 5*B^2*a*b^4*d^5*i^2*n*x^4 + 10*B^2*a^2*b^3*d^5*i^2*n*x^3 + 10*(B^2*
b^5*c^3*d^2 - 3*B^2*a*b^4*c^2*d^3 + 3*B^2*a^2*b^3*c*d^4)*i^2*n*x^2 + 5*(3*B
^2*b^5*c^4*d - 8*B^2*a*b^4*c^3*d^2 + 6*B^2*a^2*b^3*c^2*d^3)*i^2*n*x + (6*B^
2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 10*B^2*a^2*b^3*c^3*d^2)*i^2*n)*log((b*x +
a)/(d*x + c)))*log(e) + 60*((47*B^2*b^5*d^5*i^2*n^2 + 60*A*B*b^5*d^5*i^2*n)
*x^5 + (72*B^2*b^5*c^5 - 225*B^2*a*b^4*c^4*d + 200*B^2*a^2*b^3*c^3*d^2)*i^2
*n^2 + 5*(60*A*B*a*b^4*d^5*i^2*n + (12*B^2*b^5*c*d^4 + 35*B^2*a*b^4*d^5)*i^
2*n^2)*x^4 + 60*(6*A*B*b^5*c^5 - 15*A*B*a*b^4*c^4*d + 10*A*B*a^2*b^3*c^3*d^
2)*i^2*n + 10*(60*A*B*a^2*b^3*d^5*i^2*n - (3*B^2*b^5*c^2*d^3 - 30*B^2*a*b^4
*c*d^4 - 20*B^2*a^2*b^3*d^5)*i^2*n^2)*x^3 + 10*((2*B^2*b^5*c^3*d^2 - 15*B^2
*a*b^4*c^2*d^3 + 60*B^2*a^2*b^3*c*d^4)*i^2*n^2 + 60*(A*B*b^5*c^3*d^2 - 3*A*
B*a*b^4*c^2*d^3 + 3*A*B*a^2*b^3*c*d^4)*i^2*n)*x^2 + 5*((27*B^2*b^5*c^4*d -
100*B^2*a*b^4*c^3*d^2 + 120*B^2*a^2*b^3*c^2*d^3)*i^2*n^2 + 60*(3*A*B*b^5*c^
4*d - 8*A*B*a*b^4*c^3*d^2 + 6*A*B*a^2*b^3*c^2*d^3)*i^2*n)*x)*log((b*x + a)/
(d*x + c)))/((b^11*c^3 - 3*a*b^10*c^2*d + 3*a^2*b^9*c*d^2 - a^3*b^8*d^3)*g^
6*x^5 + 5*(a*b^10*c^3 - 3*a^2*b^9*c^2*d + 3*a^3*b^8*c*d^2 - a^4*b^7*d^3)*g^
6*x^4 + 10*(a^2*b^9*c^3 - 3*a^3*b^8*c^2*d + 3*a^4*b^7*c*d^2 - a^5*b^6*d^3)*
g^6*x^3 + 10*(a^3*b^8*c^3 - 3*a^4*b^7*c^2*d + 3*a^5*b^6*c*d^2 - a^6*b^5*d^3
)*g^6*x^2 + 5*(a^4*b^7*c^3 - 3*a^5*b^6*c^2*d + 3*a^6*b^5*c*d^2 - a^7*b^4*d^
3)*g^6*x + (a^5*b^6*c^3 - 3*a^6*b^5*c^2*d + 3*a^7*b^4*c*d^2 - a^8*b^3*d^3)*
g^6)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^6,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^2 \left(B \ln \left(e \left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2}{\left(bgx + ag\right)^6}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^6,x)
```

```
[Out] int((d*i*x+c*i)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^6,x)
```

maxima [B] time = 11.75, size = 10936, normalized size = 22.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^6,x,
 algorithm="maxima")
```

```
[Out] -1/150*A*B*c^2*i^2*n*((60*b^4*d^4*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a
^2*b^2*c^2*d^2 - 163*a^3*b*c*d^3 + 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^
4)*x^3 + 10*(2*b^4*c^2*d^2 - 13*a*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^
4*c^3*d - 17*a*b^3*c^2*d^2 + 43*a^2*b^2*c*d^3 - 77*a^3*b*d^4)*x)/((b^10*c^4
 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x
^5 + 5*(a*b^9*c^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 +
 a^5*b^5*d^4)*g^6*x^4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d
^2 - 4*a^5*b^5*c*d^3 + a^6*b^4*d^4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c
^3*d + 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*
b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d
^4)*g^6*x + (a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*
c*d^3 + a^9*b*d^4)*g^6) + 60*d^5*log(b*x + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 1
0*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6)
- 60*d^5*log(d*x + c)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a
^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6)) - 1/900*A*B*d^2*i^2*n*(
(47*a^2*b^4*c^4 - 278*a^3*b^3*c^3*d + 822*a^4*b^2*c^2*d^2 - 278*a^5*b*c*d^3
 + 47*a^6*d^4 + 60*(10*b^6*c^2*d^2 - 5*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 - 30*
(10*b^6*c^3*d - 95*a*b^5*c^2*d^2 + 46*a^2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^3 +
10*(20*b^6*c^4 - 140*a*b^5*c^3*d + 537*a^2*b^4*c^2*d^2 - 248*a^3*b^3*c*d^3
+ 47*a^4*b^2*d^4)*x^2 + 5*(35*a*b^5*c^4 - 218*a^2*b^4*c^3*d + 702*a^3*b^3*c
^2*d^2 - 278*a^4*b^2*c*d^3 + 47*a^5*b*d^4)*x)/((b^12*c^4 - 4*a*b^11*c^3*d +
 6*a^2*b^10*c^2*d^2 - 4*a^3*b^9*c*d^3 + a^4*b^8*d^4)*g^6*x^5 + 5*(a*b^11*c^
4 - 4*a^2*b^10*c^3*d + 6*a^3*b^9*c^2*d^2 - 4*a^4*b^8*c*d^3 + a^5*b^7*d^4)*g
^6*x^4 + 10*(a^2*b^10*c^4 - 4*a^3*b^9*c^3*d + 6*a^4*b^8*c^2*d^2 - 4*a^5*b^7
*c*d^3 + a^6*b^6*d^4)*g^6*x^3 + 10*(a^3*b^9*c^4 - 4*a^4*b^8*c^3*d + 6*a^5*b
^7*c^2*d^2 - 4*a^6*b^6*c*d^3 + a^7*b^5*d^4)*g^6*x^2 + 5*(a^4*b^8*c^4 - 4*a^
5*b^7*c^3*d + 6*a^6*b^6*c^2*d^2 - 4*a^7*b^5*c*d^3 + a^8*b^4*d^4)*g^6*x + (a
^5*b^7*c^4 - 4*a^6*b^6*c^3*d + 6*a^7*b^5*c^2*d^2 - 4*a^8*b^4*c*d^3 + a^9*b^
3*d^4)*g^6) + 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(b*x + a)/((b^
```

```
8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4*b^4
*c*d^4 - a^5*b^3*d^5)*g^6) - 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*lo
g(d*x + c)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*
d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6)) - 1/300*A*B*c*d*i^2*n*((27*a*b^4
*c^4 - 148*a^2*b^3*c^3*d + 352*a^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d
^4 - 60*(5*b^5*c*d^3 - a*b^4*d^4)*x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3
+ 9*a^2*b^3*d^4)*x^3 - 10*(10*b^5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*
d^3 - 47*a^3*b^2*d^4)*x^2 + 5*(15*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^
2*d^2 - 428*a^3*b^2*c*d^3 + 77*a^4*b*d^4)*x)/((b^11*c^4 - 4*a*b^10*c^3*d +
6*a^2*b^9*c^2*d^2 - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4
- 4*a^2*b^9*c^3*d + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*
x^4 + 10*(a^2*b^9*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d
^3 + a^6*b^5*d^4)*g^6*x^3 + 10*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c
^2*d^2 - 4*a^6*b^5*c*d^3 + a^7*b^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^
6*c^3*d + 6*a^6*b^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b
^6*c^4 - 4*a^6*b^5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^
4)*g^6) - 60*(5*b*c*d^4 - a*d^5)*log(b*x + a)/((b^7*c^5 - 5*a*b^6*c^4*d + 1
0*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6
) + 60*(5*b*c*d^4 - a*d^5)*log(d*x + c)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*
b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6)) - 1
/10*(5*b*x + a)*B^2*c*d*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^7*g
^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*
b^3*g^6*x + a^5*b^2*g^6) - 1/30*(10*b^2*x^2 + 5*a*b*x + a^2)*B^2*d^2*i^2*lo
g(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^8*g^6*x^5 + 5*a*b^7*g^6*x^4 + 10*
a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3*g^6) - 1/9
000*(60*n*((60*b^4*d^4*x^4 + 12*b^4*c^4 - 63*a*b^3*c^3*d + 137*a^2*b^2*c^2*
d^2 - 163*a^3*b*c*d^3 + 137*a^4*d^4 - 30*(b^4*c*d^3 - 9*a*b^3*d^4)*x^3 + 10
*(2*b^4*c^2*d^2 - 13*a*b^3*c*d^3 + 47*a^2*b^2*d^4)*x^2 - 5*(3*b^4*c^3*d - 1
7*a*b^3*c^2*d^2 + 43*a^2*b^2*c*d^3 - 77*a^3*b*d^4)*x)/((b^10*c^4 - 4*a*b^9*
c^3*d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*g^6*x^5 + 5*(a*b
^9*c^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^
4)*g^6*x^4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*
b^5*c*d^3 + a^6*b^4*d^4)*g^6*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^
5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*g^6*x^2 + 5*(a^4*b^6*c^4 - 4
*a^5*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*g^6*x +
 (a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9
*b*d^4)*g^6) + 60*d^5*log(b*x + a)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c
^3*d^2 - 10*a^3*b^3*c^2*d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6) - 60*d^5*lo
g(d*x + c)/((b^6*c^5 - 5*a*b^5*c^4*d + 10*a^2*b^4*c^3*d^2 - 10*a^3*b^3*c^2*
d^3 + 5*a^4*b^2*c*d^4 - a^5*b*d^5)*g^6))*log(e*(b*x/(d*x + c) + a/(d*x + c)
)^n) + (144*b^5*c^5 - 1125*a*b^4*c^4*d + 4000*a^2*b^3*c^3*d^2 - 9000*a^3*b^
2*c^2*d^3 + 18000*a^4*b*c*d^4 - 12019*a^5*d^5 + 8220*(b^5*c*d^4 - a*b^4*d^5
)*x^4 - 30*(77*b^5*c^2*d^3 - 1250*a*b^4*c*d^4 + 1173*a^2*b^3*d^5)*x^3 + 10*
(94*b^5*c^3*d^2 - 975*a*b^4*c^2*d^3 + 6600*a^2*b^3*c*d^4 - 5719*a^3*b^2*d^5
)*x^2 - 1800*(b^5*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b
^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d^5)*log(b*x + a)^2 - 1800*(b^5*d^5*x^5 +
5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x +
 a^5*d^5)*log(d*x + c)^2 - 5*(81*b^5*c^4*d - 700*a*b^4*c^3*d^2 + 3000*a^2*b
^3*c^2*d^3 - 10800*a^3*b^2*c*d^4 + 8419*a^4*b*d^5)*x + 8220*(b^5*d^5*x^5 +
5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x +
 a^5*d^5)*log(b*x + a) - 60*(137*b^5*d^5*x^5 + 685*a*b^4*d^5*x^4 + 1370*a^2
*b^3*d^5*x^3 + 1370*a^3*b^2*d^5*x^2 + 685*a^4*b*d^5*x + 137*a^5*d^5 - 60*(b
^5*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*
a^4*b*d^5*x + a^5*d^5)*log(b*x + a))*log(d*x + c))*n^2/(a^5*b^6*c^5*g^6 - 5
*a^6*b^5*c^4*d*g^6 + 10*a^7*b^4*c^3*d^2*g^6 - 10*a^8*b^3*c^2*d^3*g^6 + 5*a^
9*b^2*c*d^4*g^6 - a^10*b*d^5*g^6 + (b^11*c^5*g^6 - 5*a*b^10*c^4*d*g^6 + 10*
a^2*b^9*c^3*d^2*g^6 - 10*a^3*b^8*c^2*d^3*g^6 + 5*a^4*b^7*c*d^4*g^6 - a^5*b^
6*d^5*g^6)*x^5 + 5*(a*b^10*c^5*g^6 - 5*a^2*b^9*c^4*d*g^6 + 10*a^3*b^8*c^3*d
^2*g^6 - 10*a^4*b^7*c^2*d^3*g^6 + 5*a^5*b^6*c*d^4*g^6 - a^6*b^5*d^5*g^6)*x^
```

4 + 10*(a^2*b^9*c^5*g^6 - 5*a^3*b^8*c^4*d*g^6 + 10*a^4*b^7*c^3*d^2*g^6 - 10*a^5*b^6*c^2*d^3*g^6 + 5*a^6*b^5*c*d^4*g^6 - a^7*b^4*d^5*g^6)*x^3 + 10*(a^3*b^8*c^5*g^6 - 5*a^4*b^7*c^4*d*g^6 + 10*a^5*b^6*c^3*d^2*g^6 - 10*a^6*b^5*c^2*d^3*g^6 + 5*a^7*b^4*c*d^4*g^6 - a^8*b^3*d^5*g^6)*x^2 + 5*(a^4*b^7*c^5*g^6 - 5*a^5*b^6*c^4*d*g^6 + 10*a^6*b^5*c^3*d^2*g^6 - 10*a^7*b^4*c^2*d^3*g^6 + 5*a^8*b^3*c*d^4*g^6 - a^9*b^2*d^5*g^6)*x))*B^2*c^2*i^2 - 1/18000*(60*n*((27*a*b^4*c^4 - 148*a^2*b^3*c^3*d + 352*a^3*b^2*c^2*d^2 - 548*a^4*b*c*d^3 + 77*a^5*d^4 - 60*(5*b^5*c*d^3 - a*b^4*d^4)*x^4 + 30*(5*b^5*c^2*d^2 - 46*a*b^4*c*d^3 + 9*a^2*b^3*d^4)*x^3 - 10*(10*b^5*c^3*d - 67*a*b^4*c^2*d^2 + 248*a^2*b^3*c*d^3 - 47*a^3*b^2*d^4)*x^2 + 5*(15*b^5*c^4 - 88*a*b^4*c^3*d + 232*a^2*b^3*c^2*d^2 - 428*a^3*b^2*c*d^3 + 77*a^4*b*d^4)*x)/((b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2*b^9*c^2*d^2 - 4*a^3*b^8*c*d^3 + a^4*b^7*d^4)*g^6*x^5 + 5*(a*b^10*c^4 - 4*a^2*b^9*c^3*d + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*g^6*x^4 + 10*(a^2*b^9*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^3 + a^6*b^5*d^4)*g^6*x^3 + 10*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*b^6*c^2*d^2 - 4*a^6*b^5*c*d^3 + a^7*b^4*d^4)*g^6*x^2 + 5*(a^4*b^7*c^4 - 4*a^5*b^6*c^3*d + 6*a^6*b^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a^8*b^3*d^4)*g^6*x + (a^5*b^6*c^4 - 4*a^6*b^5*c^3*d + 6*a^7*b^4*c^2*d^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*g^6) - 60*(5*b*c*d^4 - a*d^5)*log(b*x + a)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6) + 60*(5*b*c*d^4 - a*d^5)*log(d*x + c)/((b^7*c^5 - 5*a*b^6*c^4*d + 10*a^2*b^5*c^3*d^2 - 10*a^3*b^4*c^2*d^3 + 5*a^4*b^3*c*d^4 - a^5*b^2*d^5)*g^6))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + (549*a*b^5*c^5 - 4625*a^2*b^4*c^4*d + 19000*a^3*b^3*c^3*d^2 - 63000*a^4*b^2*c^2*d^3 + 51875*a^5*b*c*d^4 - 3799*a^6*d^5 - 60*(625*b^6*c^2*d^3 - 702*a*b^5*c*d^4 + 77*a^2*b^4*d^5)*x^4 + 30*(325*b^6*c^3*d^2 - 5667*a*b^5*c^2*d^3 + 5975*a^2*b^4*c*d^4 - 633*a^3*b^3*d^5)*x^3 - 10*(350*b^6*c^4*d - 3949*a*b^5*c^3*d^2 + 29475*a^2*b^4*c^2*d^3 - 28775*a^3*b^3*c*d^4 + 2899*a^4*b^2*d^5)*x^2 + 1800*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b^5*d^5)*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 + 10*(5*a^2*b^4*c*d^4 - a^3*b^3*d^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5)*x^2 + 5*(5*a^4*b^2*c*d^4 - a^5*b*d^5)*x)*log(b*x + a)^2 + 1800*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b^5*d^5)*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 + 10*(5*a^2*b^4*c*d^4 - a^3*b^3*d^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5)*x^2 + 5*(5*a^4*b^2*c*d^4 - a^5*b*d^5)*x)*log(d*x + c)^2 + 5*(225*b^6*c^5 - 2201*a*b^5*c^4*d + 10900*a^2*b^4*c^3*d^2 - 46200*a^3*b^3*c^2*d^3 + 41075*a^4*b^2*c*d^4 - 3799*a^5*b*d^5)*x - 60*(625*a^5*b*c*d^4 - 77*a^6*d^5 + (625*b^6*c*d^4 - 77*a*b^5*d^5)*x^5 + 5*(625*a*b^5*c*d^4 - 77*a^2*b^4*d^5)*x^4 + 10*(625*a^2*b^4*c*d^4 - 77*a^3*b^3*d^5)*x^3 + 10*(625*a^3*b^3*c*d^4 - 77*a^4*b^2*d^5)*x^2 + 5*(625*a^4*b^2*c*d^4 - 77*a^5*b*d^5)*x)*log(b*x + a) + 60*(625*a^5*b*c*d^4 - 77*a^6*d^5 + (625*b^6*c*d^4 - 77*a*b^5*d^5)*x^5 + 5*(625*a*b^5*c*d^4 - 77*a^2*b^4*d^5)*x^4 + 10*(625*a^2*b^4*c*d^4 - 77*a^3*b^3*d^5)*x^3 + 10*(625*a^3*b^3*c*d^4 - 77*a^4*b^2*d^5)*x^2 + 5*(625*a^4*b^2*c*d^4 - 77*a^5*b*d^5)*x - 60*(5*a^5*b*c*d^4 - a^6*d^5 + (5*b^6*c*d^4 - a*b^5*d^5)*x^5 + 5*(5*a*b^5*c*d^4 - a^2*b^4*d^5)*x^4 + 10*(5*a^2*b^4*c*d^4 - a^3*b^3*d^5)*x^3 + 10*(5*a^3*b^3*c*d^4 - a^4*b^2*d^5)*x^2 + 5*(5*a^4*b^2*c*d^4 - a^5*b*d^5)*x)*log(b*x + a))*log(d*x + c))*n^2/(a^5*b^7*c^5*g^6 - 5*a^6*b^6*c^4*d*g^6 + 10*a^7*b^5*c^3*d^2*g^6 - 10*a^8*b^4*c^2*d^3*g^6 + 5*a^9*b^3*c*d^4*g^6 - a^10*b^2*d^5*g^6 + (b^12*c^5*g^6 - 5*a*b^11*c^4*d*g^6 + 10*a^2*b^10*c^3*d^2*g^6 - 10*a^3*b^9*c^2*d^3*g^6 + 5*a^4*b^8*c*d^4*g^6 - a^5*b^7*d^5*g^6)*x^5 + 5*(a*b^11*c^5*g^6 - 5*a^2*b^10*c^4*d*g^6 + 10*a^3*b^9*c^3*d^2*g^6 - 10*a^4*b^8*c^2*d^3*g^6 + 5*a^5*b^7*c*d^4*g^6 - a^6*b^6*d^5*g^6)*x^4 + 10*(a^2*b^10*c^5*g^6 - 5*a^3*b^9*c^4*d*g^6 + 10*a^4*b^8*c^3*d^2*g^6 - 10*a^5*b^7*c^2*d^3*g^6 + 5*a^6*b^6*c*d^4*g^6 - a^7*b^5*d^5*g^6)*x^3 + 10*(a^3*b^9*c^5*g^6 - 5*a^4*b^8*c^4*d*g^6 + 10*a^5*b^7*c^3*d^2*g^6 - 10*a^6*b^6*c^2*d^3*g^6 + 5*a^7*b^5*c*d^4*g^6 - a^8*b^4*d^5*g^6)*x^2 + 5*(a^4*b^8*c^5*g^6 - 5*a^5*b^7*c^4*d*g^6 + 10*a^6*b^6*c^3*d^2*g^6 - 10*a^7*b^5*c^2*d^3*g^6 + 5*a^8*b^4*c*d^4*g^6 - a^9*b^3*d^5*g^6)*x))*B^2*c*d*i^2 - 1/54000*(60*n*((47*a^2*b^4*c^4 - 278*a^3*b^3*c^3*d + 822*a^4*b^2*c^2*d^2 - 278*a^5*b*c*d^3 + 47*a^6*d^4 + 60*(10*b^6*c^2*d^2 - 5*a*b^5*c*d^3 + a^2*b^4*d^4)*x^4 -

30*(10*b^6*c^3*d - 95*a*b^5*c^2*d^2 + 46*a^2*b^4*c*d^3 - 9*a^3*b^3*d^4)*x^
3 + 10*(20*b^6*c^4 - 140*a*b^5*c^3*d + 537*a^2*b^4*c^2*d^2 - 248*a^3*b^3*c*
d^3 + 47*a^4*b^2*d^4)*x^2 + 5*(35*a*b^5*c^4 - 218*a^2*b^4*c^3*d + 702*a^3*b
^3*c^2*d^2 - 278*a^4*b^2*c*d^3 + 47*a^5*b*d^4)*x)/((b^12*c^4 - 4*a*b^11*c^3
*d + 6*a^2*b^10*c^2*d^2 - 4*a^3*b^9*c*d^3 + a^4*b^8*d^4)*g^6*x^5 + 5*(a*b^1
1*c^4 - 4*a^2*b^10*c^3*d + 6*a^3*b^9*c^2*d^2 - 4*a^4*b^8*c*d^3 + a^5*b^7*d^
4)*g^6*x^4 + 10*(a^2*b^10*c^4 - 4*a^3*b^9*c^3*d + 6*a^4*b^8*c^2*d^2 - 4*a^5
*b^7*c*d^3 + a^6*b^6*d^4)*g^6*x^3 + 10*(a^3*b^9*c^4 - 4*a^4*b^8*c^3*d + 6*a
^5*b^7*c^2*d^2 - 4*a^6*b^6*c*d^3 + a^7*b^5*d^4)*g^6*x^2 + 5*(a^4*b^8*c^4 -
4*a^5*b^7*c^3*d + 6*a^6*b^6*c^2*d^2 - 4*a^7*b^5*c*d^3 + a^8*b^4*d^4)*g^6*x
+ (a^5*b^7*c^4 - 4*a^6*b^6*c^3*d + 6*a^7*b^5*c^2*d^2 - 4*a^8*b^4*c*d^3 + a^
9*b^3*d^4)*g^6) + 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5)*log(b*x + a)/
((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*c^2*d^3 + 5*a^4
*b^4*c*d^4 - a^5*b^3*d^5)*g^6) - 60*(10*b^2*c^2*d^3 - 5*a*b*c*d^4 + a^2*d^5
)*log(d*x + c)/((b^8*c^5 - 5*a*b^7*c^4*d + 10*a^2*b^6*c^3*d^2 - 10*a^3*b^5*
c^2*d^3 + 5*a^4*b^4*c*d^4 - a^5*b^3*d^5)*g^6))*log(e*(b*x/(d*x + c) + a/(d*
x + c))^n) + (1489*a^2*b^5*c^5 - 14375*a^3*b^4*c^4*d + 85000*a^4*b^3*c^3*d^
2 - 85000*a^5*b^2*c^2*d^3 + 14375*a^6*b*c*d^4 - 1489*a^7*d^5 + 60*(1100*b^7
*c^3*d^2 - 1425*a*b^6*c^2*d^3 + 372*a^2*b^5*c*d^4 - 47*a^3*b^4*d^5)*x^4 - 3
0*(500*b^7*c^4*d - 9825*a*b^6*c^3*d^2 + 11937*a^2*b^5*c^2*d^3 - 2975*a^3*b^
4*c*d^4 + 363*a^4*b^3*d^5)*x^3 + 10*(400*b^7*c^5 - 5450*a*b^6*c^4*d + 49189
*a^2*b^5*c^3*d^2 - 55525*a^3*b^4*c^2*d^3 + 12875*a^4*b^3*c*d^4 - 1489*a^5*b
^2*d^5)*x^2 - 1800*(10*a^5*b^2*c^2*d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*
c^2*d^3 - 5*a*b^6*c*d^4 + a^2*b^5*d^5)*x^5 + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^
5*c*d^4 + a^3*b^4*d^5)*x^4 + 10*(10*a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4
*b^3*d^5)*x^3 + 10*(10*a^3*b^4*c^2*d^3 - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2
+ 5*(10*a^4*b^3*c^2*d^3 - 5*a^5*b^2*c*d^4 + a^6*b*d^5)*x)*log(b*x + a)^2 -
1800*(10*a^5*b^2*c^2*d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*a
*b^6*c*d^4 + a^2*b^5*d^5)*x^5 + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^3
*b^4*d^5)*x^4 + 10*(10*a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^3
+ 10*(10*a^3*b^4*c^2*d^3 - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2 + 5*(10*a^4*
b^3*c^2*d^3 - 5*a^5*b^2*c*d^4 + a^6*b*d^5)*x)*log(d*x + c)^2 + 5*(925*a*b^6
*c^5 - 9911*a^2*b^5*c^4*d + 67900*a^3*b^4*c^3*d^2 - 71800*a^4*b^3*c^2*d^3 +
14375*a^5*b^2*c*d^4 - 1489*a^6*b*d^5)*x + 60*(1100*a^5*b^2*c^2*d^3 - 325*a
^6*b*c*d^4 + 47*a^7*d^5 + (1100*b^7*c^2*d^3 - 325*a*b^6*c*d^4 + 47*a^2*b^5*
d^5)*x^5 + 5*(1100*a*b^6*c^2*d^3 - 325*a^2*b^5*c*d^4 + 47*a^3*b^4*d^5)*x^4
+ 10*(1100*a^2*b^5*c^2*d^3 - 325*a^3*b^4*c*d^4 + 47*a^4*b^3*d^5)*x^3 + 10*(
1100*a^3*b^4*c^2*d^3 - 325*a^4*b^3*c*d^4 + 47*a^5*b^2*d^5)*x^2 + 5*(1100*a^
4*b^3*c^2*d^3 - 325*a^5*b^2*c*d^4 + 47*a^6*b*d^5)*x)*log(b*x + a) - 60*(110
0*a^5*b^2*c^2*d^3 - 325*a^6*b*c*d^4 + 47*a^7*d^5 + (1100*b^7*c^2*d^3 - 325*
a*b^6*c*d^4 + 47*a^2*b^5*d^5)*x^5 + 5*(1100*a*b^6*c^2*d^3 - 325*a^2*b^5*c*d
^4 + 47*a^3*b^4*d^5)*x^4 + 10*(1100*a^2*b^5*c^2*d^3 - 325*a^3*b^4*c*d^4 + 4
7*a^4*b^3*d^5)*x^3 + 10*(1100*a^3*b^4*c^2*d^3 - 325*a^4*b^3*c*d^4 + 47*a^5*
b^2*d^5)*x^2 + 5*(1100*a^4*b^3*c^2*d^3 - 325*a^5*b^2*c*d^4 + 47*a^6*b*d^5)*
x - 60*(10*a^5*b^2*c^2*d^3 - 5*a^6*b*c*d^4 + a^7*d^5 + (10*b^7*c^2*d^3 - 5*
a*b^6*c*d^4 + a^2*b^5*d^5)*x^5 + 5*(10*a*b^6*c^2*d^3 - 5*a^2*b^5*c*d^4 + a^
3*b^4*d^5)*x^4 + 10*(10*a^2*b^5*c^2*d^3 - 5*a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^
3 + 10*(10*a^3*b^4*c^2*d^3 - 5*a^4*b^3*c*d^4 + a^5*b^2*d^5)*x^2 + 5*(10*a^4
*b^3*c^2*d^3 - 5*a^5*b^2*c*d^4 + a^6*b*d^5)*x)*log(b*x + a))*log(d*x + c))*
n^2/(a^5*b^8*c^5*g^6 - 5*a^6*b^7*c^4*d*g^6 + 10*a^7*b^6*c^3*d^2*g^6 - 10*a^
8*b^5*c^2*d^3*g^6 + 5*a^9*b^4*c*d^4*g^6 - a^10*b^3*d^5*g^6 + (b^13*c^5*g^6
- 5*a*b^12*c^4*d*g^6 + 10*a^2*b^11*c^3*d^2*g^6 - 10*a^3*b^10*c^2*d^3*g^6 +
5*a^4*b^9*c*d^4*g^6 - a^5*b^8*d^5*g^6)*x^5 + 5*(a*b^12*c^5*g^6 - 5*a^2*b^11
*c^4*d*g^6 + 10*a^3*b^10*c^3*d^2*g^6 - 10*a^4*b^9*c^2*d^3*g^6 + 5*a^5*b^8*c
*d^4*g^6 - a^6*b^7*d^5*g^6)*x^4 + 10*(a^2*b^11*c^5*g^6 - 5*a^3*b^10*c^4*d*g
^6 + 10*a^4*b^9*c^3*d^2*g^6 - 10*a^5*b^8*c^2*d^3*g^6 + 5*a^6*b^7*c*d^4*g^6
- a^7*b^6*d^5*g^6)*x^3 + 10*(a^3*b^10*c^5*g^6 - 5*a^4*b^9*c^4*d*g^6 + 10*a^
5*b^8*c^3*d^2*g^6 - 10*a^6*b^7*c^2*d^3*g^6 + 5*a^7*b^6*c*d^4*g^6 - a^8*b^5*
d^5*g^6)*x^2 + 5*(a^4*b^9*c^5*g^6 - 5*a^5*b^8*c^4*d*g^6 + 10*a^6*b^7*c^3*d^

```
2*g^6 - 10*a^7*b^6*c^2*d^3*g^6 + 5*a^8*b^5*c*d^4*g^6 - a^9*b^4*d^5*g^6)*x))
*B^2*d^2*i^2 - 1/5*(5*b*x + a)*A*B*c*d*i^2*log(e*(b*x/(d*x + c) + a/(d*x +
c))^n)/(b^7*g^6*x^5 + 5*a*b^6*g^6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6
*x^2 + 5*a^4*b^3*g^6*x + a^5*b^2*g^6) - 1/15*(10*b^2*x^2 + 5*a*b*x + a^2)*A
*B*d^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^8*g^6*x^5 + 5*a*b^7*g^
6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5*b^3
*g^6) - 1/5*B^2*c^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(b^6*g^6*x
^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*
g^6*x + a^5*b*g^6) - 1/10*(5*b*x + a)*A^2*c*d*i^2/(b^7*g^6*x^5 + 5*a*b^6*g^
6*x^4 + 10*a^2*b^5*g^6*x^3 + 10*a^3*b^4*g^6*x^2 + 5*a^4*b^3*g^6*x + a^5*b^2
*g^6) - 1/30*(10*b^2*x^2 + 5*a*b*x + a^2)*A^2*d^2*i^2/(b^8*g^6*x^5 + 5*a*b^
7*g^6*x^4 + 10*a^2*b^6*g^6*x^3 + 10*a^3*b^5*g^6*x^2 + 5*a^4*b^4*g^6*x + a^5
*b^3*g^6) - 2/5*A*B*c^2*i^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^6*g^6
*x^5 + 5*a*b^5*g^6*x^4 + 10*a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^
2*g^6*x + a^5*b*g^6) - 1/5*A^2*c^2*i^2/(b^6*g^6*x^5 + 5*a*b^5*g^6*x^4 + 10*
a^2*b^4*g^6*x^3 + 10*a^3*b^3*g^6*x^2 + 5*a^4*b^2*g^6*x + a^5*b*g^6)
```

mupad [B] time = 11.15, size = 3296, normalized size = 6.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^6,x)
```

```
[Out] ((1800*A^2*a^4*d^4*i^2 + 10800*A^2*b^4*c^4*i^2 + 1489*B^2*a^4*d^4*i^2*n^2 +
 864*B^2*b^4*c^4*i^2*n^2 - 16200*A^2*a*b^3*c^3*d*i^2 + 1800*A^2*a^3*b*c*d^3
*i^2 + 2820*A*B*a^4*d^4*i^2*n + 4320*A*B*b^4*c^4*i^2*n + 1800*A^2*a^2*b^2*c
^2*d^2*i^2 + 1489*B^2*a^2*b^2*c^2*d^2*i^2*n^2 - 2511*B^2*a*b^3*c^3*d*i^2*n^
2 + 1489*B^2*a^3*b*c*d^3*i^2*n^2 + 2820*A*B*a^2*b^2*c^2*d^2*i^2*n - 9180*A*
B*a*b^3*c^3*d*i^2*n + 2820*A*B*a^3*b*c*d^3*i^2*n)/(60*(a*d - b*c)) + (x*(18
00*A^2*a^3*b*d^4*i^2 + 5400*A^2*b^4*c^3*d*i^2 - 9000*A^2*a*b^3*c^2*d^2*i^2
+ 1800*A^2*a^2*b^2*c*d^3*i^2 + 1489*B^2*a^3*b*d^4*i^2*n^2 + 189*B^2*b^4*c^3
*d*i^2*n^2 + 1620*A*B*b^4*c^3*d*i^2*n - 911*B^2*a*b^3*c^2*d^2*i^2*n^2 + 148
9*B^2*a^2*b^2*c*d^3*i^2*n^2 + 2820*A*B*a^3*b*d^4*i^2*n - 4380*A*B*a*b^3*c^2
*d^2*i^2*n + 2820*A*B*a^2*b^2*c*d^3*i^2*n))/(12*(a*d - b*c)) + (x^2*(1800*A
^2*a^2*b^2*d^4*i^2 + 1800*A^2*b^4*c^2*d^2*i^2 - 3600*A^2*a*b^3*c*d^3*i^2 +
1489*B^2*a^2*b^2*d^4*i^2*n^2 - 86*B^2*b^4*c^2*d^2*i^2*n^2 + 2820*A*B*a^2*b^
2*d^4*i^2*n + 120*A*B*b^4*c^2*d^2*i^2*n + 289*B^2*a*b^3*c*d^3*i^2*n^2 - 780
*A*B*a*b^3*c*d^3*i^2*n))/(6*(a*d - b*c)) + (x^3*(363*B^2*a*b^3*d^4*i^2*n^2
+ 13*B^2*b^4*c*d^3*i^2*n^2 - 60*A*B*b^4*c*d^3*i^2*n + 540*A*B*a*b^3*d^4*i^2
*n))/(2*(a*d - b*c)) + (d*x^4*(47*B^2*b^4*d^3*i^2*n^2 + 60*A*B*b^4*d^3*i^2*
n))/(a*d - b*c))/(x*(4500*a^4*b^5*c*g^6 - 4500*a^5*b^4*d*g^6) - x^4*(4500*a
^2*b^7*d*g^6 - 4500*a*b^8*c*g^6) + x^5*(900*b^9*c*g^6 - 900*a*b^8*d*g^6) +
x^2*(9000*a^3*b^6*c*g^6 - 9000*a^4*b^5*d*g^6) + x^3*(9000*a^2*b^7*c*g^6 - 9
000*a^3*b^6*d*g^6) + 900*a^5*b^4*c*g^6 - 900*a^6*b^3*d*g^6) - log(e*((a + b
*x)/(c + d*x))^n)^2*((a*((B^2*c*d*i^2)/(10*b^2) + (B^2*a*d^2*i^2)/(30*b^3))
 + x*(b*((B^2*c*d*i^2)/(10*b^2) + (B^2*a*d^2*i^2)/(30*b^3)) + (2*B^2*c*d*i^
2)/(5*b) + (2*B^2*a*d^2*i^2)/(15*b^2)) + (B^2*c^2*i^2)/(5*b) + (B^2*d^2*i^2
*x^2)/(3*b))/(a^5*g^6 + b^5*g^6*x^5 + 5*a*b^4*g^6*x^4 + 10*a^3*b^2*g^6*x^2
+ 10*a^2*b^3*g^6*x^3 + 5*a^4*b*g^6*x) - (B^2*d^5*i^2)/(30*b^3*g^6*(a^3*d^3
- b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))) - log(e*((a + b*x)/(c + d*x))^
n)*((a*(A*B*a*d^2*i^2 - (B^2*a*d^2*i^2*n)/2 + (B^2*b*c*d*i^2*n)/2 + 3*A*B*b
*c*d*i^2) + x*(b*(A*B*a*d^2*i^2 - (B^2*a*d^2*i^2*n)/2 + (B^2*b*c*d*i^2*n)/2
 + 3*A*B*b*c*d*i^2) + 4*A*B*a*b*d^2*i^2 + 12*A*B*b^2*c*d*i^2 - 2*B^2*a*b*d^
2*i^2*n + 2*B^2*b^2*c*d*i^2*n) + 6*A*B*b^2*c^2*i^2 - B^2*a^2*d^2*i^2*n + B^
2*b^2*c^2*i^2*n + 10*A*B*b^2*d^2*i^2*x^2)/(15*a^5*b^3*g^6 + 15*b^8*g^6*x^5
+ 75*a^4*b^4*g^6*x + 75*a*b^7*g^6*x^4 + 150*a^3*b^5*g^6*x^2 + 150*a^2*b^6*g
^6*x^3) + (B^2*d^5*i^2*(x^3*(b*(b*(b*((3*a*b^3*g^6*n*(a*d - b*c))/d + (3*b^
3*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (6*a*b^4*g^6*n*(a*d - b*c))/d
```

```
 + (3*b^4*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(2*d^2)) + (9*a*b^5*g^6*n*(a*d -
 b*c))/d + (9*b^5*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (12*a*b^6*g^6
*n*(a*d - b*c))/d + (3*b^6*g^6*n*(a*d - b*c)*(5*a*d - b*c))/d^2) + x*(a*(a*
(b*((3*a*b^3*g^6*n*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d - b*c)*(5*a*d - b*c))
/(4*d^2)) + (6*a*b^4*g^6*n*(a*d - b*c))/d + (3*b^4*g^6*n*(a*d - b*c)*(5*a*d
 - b*c))/(2*d^2)) + b*(a*((3*a*b^3*g^6*n*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d
 - b*c)*(5*a*d - b*c))/(4*d^2)) + (b^3*g^6*n*(a*d - b*c)*(10*a^2*d^2 + b^2*
c^2 - 5*a*b*c*d))/(2*d^3)) + (3*b^4*g^6*n*(a*d - b*c)*(10*a^2*d^2 + b^2*c^2
 - 5*a*b*c*d))/(2*d^3)) + b*(a*(a*((3*a*b^3*g^6*n*(a*d - b*c))/d + (3*b^3*g
^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (b^3*g^6*n*(a*d - b*c)*(10*a^2*d
^2 + b^2*c^2 - 5*a*b*c*d))/(2*d^3)) + (3*b^3*g^6*n*(a*d - b*c)*(10*a^3*d^3
- b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2))/(4*d^4)) + (3*b^4*g^6*n*(a*d -
 b*c)*(10*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2))/d^4) + x^2*(
a*(b*(b*((3*a*b^3*g^6*n*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d - b*c)*(5*a*d -
b*c))/(4*d^2)) + (6*a*b^4*g^6*n*(a*d - b*c))/d + (3*b^4*g^6*n*(a*d - b*c)*(
5*a*d - b*c))/(2*d^2)) + (9*a*b^5*g^6*n*(a*d - b*c))/d + (9*b^5*g^6*n*(a*d
- b*c)*(5*a*d - b*c))/(4*d^2)) + b*(a*(b*((3*a*b^3*g^6*n*(a*d - b*c))/d + (
3*b^3*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (6*a*b^4*g^6*n*(a*d - b*c
))/d + (3*b^4*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(2*d^2)) + b*(a*((3*a*b^3*g^
6*n*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (b^
3*g^6*n*(a*d - b*c)*(10*a^2*d^2 + b^2*c^2 - 5*a*b*c*d))/(2*d^3)) + (3*b^4*g
^6*n*(a*d - b*c)*(10*a^2*d^2 + b^2*c^2 - 5*a*b*c*d))/(2*d^3)) + (3*b^5*g^6*
n*(a*d - b*c)*(10*a^2*d^2 + b^2*c^2 - 5*a*b*c*d))/d^3) + a*(a*(a*((3*a*b^3*
g^6*n*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d - b*c)*(5*a*d - b*c))/(4*d^2)) + (
b^3*g^6*n*(a*d - b*c)*(10*a^2*d^2 + b^2*c^2 - 5*a*b*c*d))/(2*d^3)) + (3*b^3
*g^6*n*(a*d - b*c)*(10*a^3*d^3 - b^3*c^3 + 5*a*b^2*c^2*d - 10*a^2*b*c*d^2))
/(4*d^4)) + (15*b^7*g^6*n*x^4*(a*d - b*c))/d + (3*b^3*g^6*n*(a*d - b*c)*(5*
a^4*d^4 + b^4*c^4 + 10*a^2*b^2*c^2*d^2 - 5*a*b^3*c^3*d - 10*a^3*b*c*d^3))/d
^5))/(15*b^3*g^6*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)*(15*a^
5*b^3*g^6 + 15*b^8*g^6*x^5 + 75*a^4*b^4*g^6*x + 75*a*b^7*g^6*x^4 + 150*a^3*
b^5*g^6*x^2 + 150*a^2*b^6*g^6*x^3))) - (B*d^5*i^2*n*atan((B*d^5*i^2*n*(60*A
 + 47*B*n)*((b^6*c^3*g^6 + a^3*b^3*d^3*g^6 - a*b^5*c^2*d*g^6 - a^2*b^4*c*d^
2*g^6)/(b^5*c^2*g^6 + a^2*b^3*d^2*g^6 - 2*a*b^4*c*d*g^6) + 2*b*d*x)*(b^5*c^
2*g^6 + a^2*b^3*d^2*g^6 - 2*a*b^4*c*d*g^6)*1i)/(b^3*g^6*(47*B^2*d^5*i^2*n^2
 + 60*A*B*d^5*i^2*n)*(a*d - b*c)^3))*(60*A + 47*B*n)*1i)/(450*b^3*g^6*(a*d
- b*c)^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**6
,x)
```

```
[Out] Timed out
```

3.178 $\int (ag+bgx)^3(ci+dix)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=1172

$$-\frac{Bg^3i^3n\left(6A+11Bn+6B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log\left(\frac{bc-ad}{b(c+dx)}\right)(bc-ad)^7}{420b^4d^4}-\frac{B^2g^3i^3n^2\log\left(\frac{a+bx}{c+dx}\right)(bc-ad)^7}{210b^4d^4}-\frac{11B^2g^3i^3r}{}$$

```
[Out] 5/84*B^2*(-a*d+b*c)^6*g^3*i^3*n^2*x/b^3/d^3+1/140*B^2*(-a*d+b*c)^3*g^3*i^3*
n^2*(b*x+a)^4/b^4-29/840*B^2*(-a*d+b*c)^5*g^3*i^3*n^2*(d*x+c)^2/b^2/d^4+47/
1260*B^2*(-a*d+b*c)^4*g^3*i^3*n^2*(d*x+c)^3/b/d^4-13/420*B^2*(-a*d+b*c)^3*g
^3*i^3*n^2*(d*x+c)^4/d^4+1/105*b*B^2*(-a*d+b*c)^2*g^3*i^3*n^2*(d*x+c)^5/d^4
-1/210*B*(-a*d+b*c)^4*g^3*i^3*n*(b*x+a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b
^4/d-3/140*B*(-a*d+b*c)^3*g^3*i^3*n*(b*x+a)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n
))/b^4-1/35*B*(-a*d+b*c)^2*g^3*i^3*n*(b*x+a)^4*(d*x+c)*(A+B*ln(e*((b*x+a)/(
d*x+c))^n))/b^3+2/21*B*(-a*d+b*c)^4*g^3*i^3*n*(d*x+c)^3*(A+B*ln(e*((b*x+a)/
(d*x+c))^n))/b/d^4-3/14*B*(-a*d+b*c)^3*g^3*i^3*n*(d*x+c)^4*(A+B*ln(e*((b*x+
a)/(d*x+c))^n))/d^4+6/35*b*B*(-a*d+b*c)^2*g^3*i^3*n*(d*x+c)^5*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))/d^4-1/21*b^2*B*(-a*d+b*c)*g^3*i^3*n*(d*x+c)^6*(A+B*ln(e*
((b*x+a)/(d*x+c))^n))/d^4+1/140*(-a*d+b*c)^3*g^3*i^3*(b*x+a)^4*(A+B*ln(e*((
b*x+a)/(d*x+c))^n))^2/b^4+1/35*(-a*d+b*c)^2*g^3*i^3*(b*x+a)^4*(d*x+c)*(A+B*
ln(e*((b*x+a)/(d*x+c))^n))^2/b^3+1/14*(-a*d+b*c)*g^3*i^3*(b*x+a)^4*(d*x+c)^
2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/7*g^3*i^3*(b*x+a)^4*(d*x+c)^3*(A+
B*ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/420*B*(-a*d+b*c)^5*g^3*i^3*n*(b*x+a)^2*(
3*A+B*n+3*B*ln(e*((b*x+a)/(d*x+c))^n))/b^4/d^2-1/420*B*(-a*d+b*c)^6*g^3*i^3
*n*(b*x+a)*(6*A+5*B*n+6*B*ln(e*((b*x+a)/(d*x+c))^n))/b^4/d^3-1/420*B*(-a*d+
b*c)^7*g^3*i^3*n*(6*A+11*B*n+6*B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b
/(d*x+c))/b^4/d^4-1/210*B^2*(-a*d+b*c)^7*g^3*i^3*n^2*ln((b*x+a)/(d*x+c))/b^
4/d^4-11/420*B^2*(-a*d+b*c)^7*g^3*i^3*n^2*ln(d*x+c)/b^4/d^4-1/70*B^2*(-a*d+
b*c)^7*g^3*i^3*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/d^4
```

Rubi [A] time = 4.48, antiderivative size = 961, normalized size of antiderivative = 0.82, number of steps used = 118, number of rules used = 13, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.289, Rules used = {2528, 2525, 12, 2486, 31, 43, 2524, 2418, 2394, 2393, 2391, 2390, 2301}

$$\frac{B^2g^3i^3n^2\log^2(c+dx)(bc-ad)^7}{140b^4d^4}-\frac{B^2g^3i^3n^2\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(c+dx)(bc-ad)^7}{70b^4d^4}+\frac{Bg^3i^3n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{70b^4d}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^
2,x]
```

```
[Out] -(A*B*(b*c - a*d)^6*g^3*i^3*n*x)/(70*b^3*d^3) + (B^2*(b*c - a*d)^6*g^3*i^3*
n^2*x)/(70*b^3*d^3) - (3*B^2*(b*c - a*d)^5*g^3*i^3*n^2*(a + b*x)^2)/(280*b^
4*d^2) + (11*B^2*(b*c - a*d)^4*g^3*i^3*n^2*(a + b*x)^3)/(1260*b^4*d) + (B^2
*(b*c - a*d)^3*g^3*i^3*n^2*(a + b*x)^4)/(42*b^4) + (B^2*d*(b*c - a*d)^2*g^3
*i^3*n^2*(a + b*x)^5)/(105*b^4) - (B^2*(b*c - a*d)^6*g^3*i^3*n*(a + b*x)*Lo
g[e*((a + b*x)/(c + d*x))^n]])/(70*b^4*d^3) + (B*(b*c - a*d)^5*g^3*i^3*n*(a
 + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(140*b^4*d^2) - (B*(b*c -
a*d)^4*g^3*i^3*n*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(210*b
^4*d) - (17*B*(b*c - a*d)^3*g^3*i^3*n*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(
c + d*x))^n]))/(140*b^4) - (B*d*(b*c - a*d)^2*g^3*i^3*n*(a + b*x)^5*(A + B*
Log[e*((a + b*x)/(c + d*x))^n]))/(7*b^4) - (B*d^2*(b*c - a*d)*g^3*i^3*n*(a
 + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(21*b^4) + ((b*c - a*d)^3*
g^3*i^3*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(4*b^4) + (3*
```

```
d*(b*c - a*d)^2*g^3*i^3*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^
2)/(5*b^4) + (d^2*(b*c - a*d)*g^3*i^3*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(
c + d*x))^n])^2)/(2*b^4) + (d^3*g^3*i^3*(a + b*x)^7*(A + B*Log[e*((a + b*x)
/(c + d*x))^n])^2)/(7*b^4) - (B^2*(b*c - a*d)^7*g^3*i^3*n^2*Log[-((d*(a + b
*x))/(b*c - a*d))]*Log[c + d*x])/(70*b^4*d^4) + (B*(b*c - a*d)^7*g^3*i^3*n*
(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(70*b^4*d^4) + (B^2*(b
*c - a*d)^7*g^3*i^3*n^2*Log[c + d*x]^2)/(140*b^4*d^4) - (B^2*(b*c - a*d)^7*
g^3*i^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(70*b^4*d^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (178c+178dx)^3(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx = \int\left(\frac{(-bc+ad)^3g^3(178c+178dx)^3\left(A+B\log\left(e\right.\right.}{d^3}\right.$$

$$= \frac{\left(b^3g^3\right)\int(178c+178dx)^6\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{5639752d^3}$$

$$= -\frac{1409938(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{d^4}$$

$$= -\frac{1409938(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{d^4}$$

$$= -\frac{1409938(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{d^4}$$

$$= -\frac{1409938(bc-ad)^3g^3(c+dx)^4\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{d^4}$$

$$= \frac{2819876AB(bc-ad)^6g^3nx}{35b^3d^3} + \frac{1409938B(bc-ad}{}$$

$$= \frac{2819876AB(bc-ad)^6g^3nx}{35b^3d^3} + \frac{2819876B^2(bc-a}{}$$

$$= \frac{2819876AB(bc-ad)^6g^3nx}{35b^3d^3} + \frac{2819876B^2(bc-a}{}$$

$$= \frac{2819876AB(bc-ad)^6g^3nx}{35b^3d^3} + \frac{2819876B^2(bc-a}{35b^3d^3}$$

$$= \frac{2819876AB(bc-ad)^6g^3nx}{35b^3d^3} + \frac{2819876B^2(bc-a}{35b^3d^3}$$

$$= \frac{2819876AB(bc-ad)^6g^3nx}{35b^3d^3} + \frac{2819876B^2(bc-a}{35b^3d^3}$$

Mathematica [B] time = 3.57, size = 2448, normalized size = 2.09

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n])^2,x]
```

```
[Out] (g^3*i^3*(35*(b*c - a*d)^3*(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n
])^2 + 84*d*(b*c - a*d)^2*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
```

)^2 + 70*d^2*(b*c - a*d)*(a + b*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
^2 + 20*d^3*(a + b*x)^7*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - (35*B*(b
*c - a*d)^4*n*(6*A*b*d*(b*c - a*d)^2*x + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[
e*((a + b*x)/(c + d*x))^n] + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2*(A + B*Log[e*
((a + b*x)/(c + d*x))^n]) + 2*d^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c +
d*x))^n]) - 6*B*(b*c - a*d)^3*n*Log[c + d*x] - 6*(b*c - a*d)^3*(A + B*Log[e
*((a + b*x)/(c + d*x))^n])*Log[c + d*x] + B*(b*c - a*d)*n*(2*b*d*(b*c - a*d
)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 3*B*(b*c - a*d)^2*n
*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 3*B*(b*c - a*d)^3*n*((2*Log[(d*(a
+ b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c +
d*x))/(b*c - a*d)])))/(3*d^4) + (7*B*(b*c - a*d)^3*n*(24*A*b*d*(b*c - a*d)
^3*x + 24*B*d*(b*c - a*d)^3*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 12*d
^2*(b*c - a*d)^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 8*d^3
*(b*c - a*d)*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*d^4*(a
+ b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 24*B*(b*c - a*d)^4*n*Log[
c + d*x] - 24*(b*c - a*d)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c +
d*x] + 4*B*(b*c - a*d)^2*n*(2*b*d*(b*c - a*d)*x - d^2*(a + b*x)^2 - 2*(b*c
- a*d)^2*Log[c + d*x]) + B*(b*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(
b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*x)^3 - 6*(b*c - a*d)^3*Log[c + d*x])
+ 12*B*(b*c - a*d)^3*n*(b*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 12*B*(b*c -
a*d)^4*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x
] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/d^4 - (7*B*(b*c - a*d)^2*n*(
120*A*b*d*(b*c - a*d)^4*x + 120*B*d*(b*c - a*d)^4*(a + b*x)*Log[e*((a + b*x
)/(c + d*x))^n] + 60*d^2*(-(b*c) + a*d)^3*(a + b*x)^2*(A + B*Log[e*((a + b*
x)/(c + d*x))^n]) + 40*d^3*(b*c - a*d)^2*(a + b*x)^3*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]) + 30*d^4*(-(b*c) + a*d)*(a + b*x)^4*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]) + 24*d^5*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
) - 120*B*(b*c - a*d)^5*n*Log[c + d*x] - 120*(b*c - a*d)^5*(A + B*Log[e*((a
+ b*x)/(c + d*x))^n])*Log[c + d*x] + 20*B*(b*c - a*d)^3*n*(2*b*d*(b*c - a*
d)*x - d^2*(a + b*x)^2 - 2*(b*c - a*d)^2*Log[c + d*x]) + 5*B*(b*c - a*d)^2*
n*(6*b*d*(b*c - a*d)^2*x + 3*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 2*d^3*(a + b*
x)^3 - 6*(b*c - a*d)^3*Log[c + d*x]) + 2*B*(b*c - a*d)*n*(12*b*d*(b*c - a*d
)^3*x - 6*d^2*(b*c - a*d)^2*(a + b*x)^2 + 4*d^3*(b*c - a*d)*(a + b*x)^3 - 3
d^4(a + b*x)^4 - 12*(b*c - a*d)^4*Log[c + d*x]) + 60*B*(b*c - a*d)^4*n*(b
*d*x + (-(b*c) + a*d)*Log[c + d*x]) + 60*B*(b*c - a*d)^5*n*((2*Log[(d*(a +
b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d
*x))/(b*c - a*d)])))/(6*d^4) + (B*(b*c - a*d)*n*(360*A*b*d*(b*c - a*d)^5*x
+ 60*b^2*B*c*d*(b*c - a*d)^4*n*x - 60*a*b*B*d^2*(b*c - a*d)^4*n*x + 462*b*B
d(b*c - a*d)^5*n*x - 30*b*B*c*d^2*(b*c - a*d)^3*n*(a + b*x)^2 + 30*a*B*d^
3*(b*c - a*d)^3*n*(a + b*x)^2 - 141*B*d^2*(b*c - a*d)^4*n*(a + b*x)^2 + 20*
b*B*c*d^3*(b*c - a*d)^2*n*(a + b*x)^3 - 20*a*B*d^4*(b*c - a*d)^2*n*(a + b*x
)^3 + 54*B*d^3*(b*c - a*d)^3*n*(a + b*x)^3 - 15*b*B*c*d^4*(b*c - a*d)*n*(a
+ b*x)^4 + 15*a*B*d^5*(b*c - a*d)*n*(a + b*x)^4 - 18*B*d^4*(b*c - a*d)^2*n*
(a + b*x)^4 + 12*b*B*c*d^5*n*(a + b*x)^5 - 12*a*B*d^6*n*(a + b*x)^5 + 360*B
d(b*c - a*d)^5*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] - 180*d^2*(b*c -
a*d)^4*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 120*d^3*(b*c -
a*d)^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 90*d^4*(b*c - a
d)^2(a + b*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 72*d^5*(b*c - a*
d)*(a + b*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 60*d^6*(a + b*x)^6*
(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 60*b*B*c*(b*c - a*d)^5*n*Log[c + d
*x] + 60*a*B*d*(b*c - a*d)^5*n*Log[c + d*x] - 822*B*(b*c - a*d)^6*n*Log[c +
d*x] - 360*(b*c - a*d)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*
x] + 180*B*(b*c - a*d)^6*n*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c +
d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(9*d^4)))/(
140*b^4)

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(A^2b^3d^3g^3i^3x^6 + A^2a^3c^3g^3i^3 + 3\left(A^2b^3cd^2 + A^2ab^2d^3\right)g^3i^3x^5 + 3\left(A^2b^3c^2d + 3A^2ab^2cd^2 + A^2a^2bd^3\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="fricas")
```

```
[Out] integral(A^2*b^3*d^3*g^3*i^3*x^6 + A^2*a^3*c^3*g^3*i^3 + 3*(A^2*b^3*c*d^2 +
 A^2*a*b^2*d^3)*g^3*i^3*x^5 + 3*(A^2*b^3*c^2*d + 3*A^2*a*b^2*c*d^2 + A^2*a^
2*b*d^3)*g^3*i^3*x^4 + (A^2*b^3*c^3 + 9*A^2*a*b^2*c^2*d + 9*A^2*a^2*b*c*d^2
 + A^2*a^3*d^3)*g^3*i^3*x^3 + 3*(A^2*a*b^2*c^3 + 3*A^2*a^2*b*c^2*d + A^2*a^
3*c*d^2)*g^3*i^3*x^2 + 3*(A^2*a^2*b*c^3 + A^2*a^3*c^2*d)*g^3*i^3*x + (B^2*b
^3*d^3*g^3*i^3*x^6 + B^2*a^3*c^3*g^3*i^3 + 3*(B^2*b^3*c*d^2 + B^2*a*b^2*d^3
)*g^3*i^3*x^5 + 3*(B^2*b^3*c^2*d + 3*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*g^3*i
^3*x^4 + (B^2*b^3*c^3 + 9*B^2*a*b^2*c^2*d + 9*B^2*a^2*b*c*d^2 + B^2*a^3*d^3
)*g^3*i^3*x^3 + 3*(B^2*a*b^2*c^3 + 3*B^2*a^2*b*c^2*d + B^2*a^3*c*d^2)*g^3*i
^3*x^2 + 3*(B^2*a^2*b*c^3 + B^2*a^3*c^2*d)*g^3*i^3*x)*log(e*((b*x + a)/(d*x
 + c))^n)^2 + 2*(A*B*b^3*d^3*g^3*i^3*x^6 + A*B*a^3*c^3*g^3*i^3 + 3*(A*B*b^3
*c*d^2 + A*B*a*b^2*d^3)*g^3*i^3*x^5 + 3*(A*B*b^3*c^2*d + 3*A*B*a*b^2*c*d^2
+ A*B*a^2*b*d^3)*g^3*i^3*x^4 + (A*B*b^3*c^3 + 9*A*B*a*b^2*c^2*d + 9*A*B*a^2
*b*c*d^2 + A*B*a^3*d^3)*g^3*i^3*x^3 + 3*(A*B*a*b^2*c^3 + 3*A*B*a^2*b*c^2*d
+ A*B*a^3*c*d^2)*g^3*i^3*x^2 + 3*(A*B*a^2*b*c^3 + A*B*a^3*c^2*d)*g^3*i^3*x)
*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{3} \left(dix+ci\right)^{3} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^3*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 6.36, size = 7845, normalized size = 6.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="maxima")
```

```
[Out] 2/7*A*B*b^3*d^3*g^3*i^3*x^7*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/7*A^
2*b^3*d^3*g^3*i^3*x^7 + A*B*b^3*c*d^2*g^3*i^3*x^6*log(e*(b*x/(d*x + c) + a/
(d*x + c))^n) + A*B*a*b^2*d^3*g^3*i^3*x^6*log(e*(b*x/(d*x + c) + a/(d*x + c
))^n) + 1/2*A^2*b^3*c*d^2*g^3*i^3*x^6 + 1/2*A^2*a*b^2*d^3*g^3*i^3*x^6 + 6/5
*A*B*b^3*c^2*d*g^3*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 18/5*A*
B*a*b^2*c*d^2*g^3*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 6/5*A*B*
a^2*b*d^3*g^3*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/5*A^2*b^3*
c^2*d*g^3*i^3*x^5 + 9/5*A^2*a*b^2*c*d^2*g^3*i^3*x^5 + 3/5*A^2*a^2*b*d^3*g^3
*i^3*x^5 + 1/2*A*B*b^3*c^3*g^3*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^
```

n) + 9/2*A*B*a*b^2*c^2*d*g^3*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)
+ 9/2*A*B*a^2*b*c*d^2*g^3*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) +
1/2*A*B*a^3*d^3*g^3*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A
^2*b^3*c^3*g^3*i^3*x^4 + 9/4*A^2*a*b^2*c^2*d*g^3*i^3*x^4 + 9/4*A^2*a^2*b*c*
d^2*g^3*i^3*x^4 + 1/4*A^2*a^3*d^3*g^3*i^3*x^4 + 2*A*B*a*b^2*c^3*g^3*i^3*x^3
log(e(b*x/(d*x + c) + a/(d*x + c))^n) + 6*A*B*a^2*b*c^2*d*g^3*i^3*x^3*log
(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*A*B*a^3*c*d^2*g^3*i^3*x^3*log(e*(b*
x/(d*x + c) + a/(d*x + c))^n) + A^2*a*b^2*c^3*g^3*i^3*x^3 + 3*A^2*a^2*b*c^2
*d*g^3*i^3*x^3 + A^2*a^3*c*d^2*g^3*i^3*x^3 + 3*A*B*a^2*b*c^3*g^3*i^3*x^2*lo
g(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3*A*B*a^3*c^2*d*g^3*i^3*x^2*log(e*(b
*x/(d*x + c) + a/(d*x + c))^n) + 3/2*A^2*a^2*b*c^3*g^3*i^3*x^2 + 3/2*A^2*a^
3*c^2*d*g^3*i^3*x^2 + 1/210*A*B*b^3*d^3*g^3*i^3*n*(60*a^7*log(b*x + a)/b^7
- 60*c^7*log(d*x + c)/d^7 - (10*(b^6*c*d^5 - a*b^5*d^6)*x^6 - 12*(b^6*c^2*d
^4 - a^2*b^4*d^6)*x^5 + 15*(b^6*c^3*d^3 - a^3*b^3*d^6)*x^4 - 20*(b^6*c^4*d^
2 - a^4*b^2*d^6)*x^3 + 30*(b^6*c^5*d - a^5*b*d^6)*x^2 - 60*(b^6*c^6 - a^6*d
^6)*x)/(b^6*d^6)) - 1/60*A*B*b^3*c*d^2*g^3*i^3*n*(60*a^6*log(b*x + a)/b^6 -
60*c^6*log(d*x + c)/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^
3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d -
a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5)) - 1/60*A*B*a*b^2*d^3
*g^3*i^3*n*(60*a^6*log(b*x + a)/b^6 - 60*c^6*log(d*x + c)/d^6 + (12*(b^5*c*
d^4 - a*b^4*d^5)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2
- a^3*b^2*d^5)*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^
5)*x)/(b^5*d^5)) + 1/10*A*B*b^3*c^2*d*g^3*i^3*n*(12*a^5*log(b*x + a)/b^5 -
12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 -
a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*
x)/(b^4*d^4)) + 3/10*A*B*a*b^2*c*d^2*g^3*i^3*n*(12*a^5*log(b*x + a)/b^5 - 1
2*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 -
a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x
)/(b^4*d^4)) + 1/10*A*B*a^2*b*d^3*g^3*i^3*n*(12*a^5*log(b*x + a)/b^5 - 12*c
^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2
*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(
b^4*d^4)) - 1/12*A*B*b^3*c^3*g^3*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(
d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x
^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 3/4*A*B*a*b^2*c^2*d*g^3*i^3*n*(6
*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)
x^3 - 3(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3))
- 3/4*A*B*a^2*b*c*d^2*g^3*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c
)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*
(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/12*A*B*a^3*d^3*g^3*i^3*n*(6*a^4*log(b
*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(
b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + A*B*a*b^
2*c^3*g^3*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*
d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 3*A*B*a^2*b*c^2*d*
g^3*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*
b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + A*B*a^3*c*d^2*g^3*i^3*n*
(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2
- 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 3*A*B*a^2*b*c^3*g^3*i^3*n*(a^2*log
(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 3*A*B*a^3*c^2
*d*g^3*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(
b*d)) + 2*A*B*a^3*c^3*g^3*i^3*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + 2*A
*B*a^3*c^3*g^3*i^3*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a^3*c^3*g
^3*i^3*x - 1/420*(107*a^4*b^2*c^3*d^4*g^3*i^3*n^2 - 39*a^5*b*c^2*d^5*g^3*i^
3*n^2 + 6*a^6*c*d^6*g^3*i^3*n^2 - 6*b^6*c^7*g^3*i^3*n*log(e) - 6*(g^3*i^3*n
^2 - 7*g^3*i^3*n*log(e))*a*b^5*c^6*d + 3*(13*g^3*i^3*n^2 - 42*g^3*i^3*n*log
(e))*a^2*b^4*c^5*d^2 - (107*g^3*i^3*n^2 - 210*g^3*i^3*n*log(e))*a^3*b^3*c^4
*d^3)*B^2*log(d*x + c)/(b^3*d^4) + 1/70*(b^7*c^7*g^3*i^3*n^2 - 7*a*b^6*c^6*
d*g^3*i^3*n^2 + 21*a^2*b^5*c^5*d^2*g^3*i^3*n^2 - 35*a^3*b^4*c^4*d^3*g^3*i^3
*n^2 + 35*a^4*b^3*c^3*d^4*g^3*i^3*n^2 - 21*a^5*b^2*c^2*d^5*g^3*i^3*n^2 + 7*
a^6*b*c*d^6*g^3*i^3*n^2 - a^7*d^7*g^3*i^3*n^2)*(log(b*x + a)*log((b*d*x + a

```
*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^4*d^4) + 1
/2520*(360*B^2*b^7*d^7*g^3*i^3*x^7*log(e)^2 - 60*((2*g^3*i^3*n*log(e) - 21*
g^3*i^3*log(e)^2)*b^7*c*d^6 - (2*g^3*i^3*n*log(e) + 21*g^3*i^3*log(e)^2)*a*
b^6*d^7)*B^2*x^6 + 24*((g^3*i^3*n^2 - 15*g^3*i^3*n*log(e) + 63*g^3*i^3*log(
e)^2)*b^7*c^2*d^5 - (2*g^3*i^3*n^2 - 189*g^3*i^3*log(e)^2)*a*b^6*c*d^6 + (g
^3*i^3*n^2 + 15*g^3*i^3*n*log(e) + 63*g^3*i^3*log(e)^2)*a^2*b^5*d^7)*B^2*x^
5 + 6*((10*g^3*i^3*n^2 - 51*g^3*i^3*n*log(e) + 105*g^3*i^3*log(e)^2)*b^7*c^
3*d^4 - (10*g^3*i^3*n^2 + 147*g^3*i^3*n*log(e) - 945*g^3*i^3*log(e)^2)*a*b^
6*c^2*d^5 - (10*g^3*i^3*n^2 - 147*g^3*i^3*n*log(e) - 945*g^3*i^3*log(e)^2)*
a^2*b^5*c*d^6 + (10*g^3*i^3*n^2 + 51*g^3*i^3*n*log(e) + 105*g^3*i^3*log(e)^
2)*a^3*b^4*d^7)*B^2*x^4 + 2*((11*g^3*i^3*n^2 - 6*g^3*i^3*n*log(e))*b^7*c^4*
d^3 + 4*(19*g^3*i^3*n^2 - 147*g^3*i^3*n*log(e) + 315*g^3*i^3*log(e)^2)*a*b^
6*c^3*d^4 - 6*(29*g^3*i^3*n^2 - 630*g^3*i^3*log(e)^2)*a^2*b^5*c^2*d^5 + 4*(
19*g^3*i^3*n^2 + 147*g^3*i^3*n*log(e) + 315*g^3*i^3*log(e)^2)*a^3*b^4*c*d^6
 + (11*g^3*i^3*n^2 + 6*g^3*i^3*n*log(e))*a^4*b^3*d^7)*B^2*x^3 - 3*(3*(3*g^3
*i^3*n^2 - 2*g^3*i^3*n*log(e))*b^7*c^5*d^2 - (67*g^3*i^3*n^2 - 42*g^3*i^3*n
*log(e))*a*b^6*c^4*d^3 + 2*(29*g^3*i^3*n^2 + 252*g^3*i^3*n*log(e) - 630*g^3
*i^3*log(e)^2)*a^2*b^5*c^3*d^4 + 2*(29*g^3*i^3*n^2 - 252*g^3*i^3*n*log(e) -
 630*g^3*i^3*log(e)^2)*a^3*b^4*c^2*d^5 - (67*g^3*i^3*n^2 + 42*g^3*i^3*n*log
(e))*a^4*b^3*c*d^6 + 3*(3*g^3*i^3*n^2 + 2*g^3*i^3*n*log(e))*a^5*b^2*d^7)*B^
2*x^2 - 18*(35*a^4*b^3*c^3*d^4*g^3*i^3*n^2 - 21*a^5*b^2*c^2*d^5*g^3*i^3*n^2
 + 7*a^6*b*c*d^6*g^3*i^3*n^2 - a^7*d^7*g^3*i^3*n^2)*B^2*log(b*x + a)^2 - 36
*(b^7*c^7*g^3*i^3*n^2 - 7*a*b^6*c^6*d*g^3*i^3*n^2 + 21*a^2*b^5*c^5*d^2*g^3*
i^3*n^2 - 35*a^3*b^4*c^4*d^3*g^3*i^3*n^2)*B^2*log(b*x + a)*log(d*x + c) + 1
8*(b^7*c^7*g^3*i^3*n^2 - 7*a*b^6*c^6*d*g^3*i^3*n^2 + 21*a^2*b^5*c^5*d^2*g^3
*i^3*n^2 - 35*a^3*b^4*c^4*d^3*g^3*i^3*n^2)*B^2*log(d*x + c)^2 + 6*(6*(g^3*i
^3*n^2 - g^3*i^3*n*log(e))*b^7*c^6*d - 3*(15*g^3*i^3*n^2 - 14*g^3*i^3*n*log
(e))*a*b^6*c^5*d^2 + 2*(73*g^3*i^3*n^2 - 63*g^3*i^3*n*log(e))*a^2*b^5*c^4*d
^3 - 2*(107*g^3*i^3*n^2 - 210*g^3*i^3*log(e)^2)*a^3*b^4*c^3*d^4 + 2*(73*g^3
*i^3*n^2 + 63*g^3*i^3*n*log(e))*a^4*b^3*c^2*d^5 - 3*(15*g^3*i^3*n^2 + 14*g^
3*i^3*n*log(e))*a^5*b^2*c*d^6 + 6*(g^3*i^3*n^2 + g^3*i^3*n*log(e))*a^6*b*d^
7)*B^2*x - 6*(6*a*b^6*c^6*d*g^3*i^3*n^2 - 39*a^2*b^5*c^5*d^2*g^3*i^3*n^2 +
107*a^3*b^4*c^4*d^3*g^3*i^3*n^2 + 6*a^7*d^7*g^3*i^3*n*log(e) - (107*g^3*i^3
*n^2 + 210*g^3*i^3*n*log(e))*a^4*b^3*c^3*d^4 + 3*(13*g^3*i^3*n^2 + 42*g^3*i
^3*n*log(e))*a^5*b^2*c^2*d^5 - 6*(g^3*i^3*n^2 + 7*g^3*i^3*n*log(e))*a^6*b*c
*d^6)*B^2*log(b*x + a) + 18*(20*B^2*b^7*d^7*g^3*i^3*x^7 + 140*B^2*a^3*b^4*c
^3*d^4*g^3*i^3*x + 70*(b^7*c*d^6*g^3*i^3 + a*b^6*d^7*g^3*i^3)*B^2*x^6 + 84*
(b^7*c^2*d^5*g^3*i^3 + 3*a*b^6*c*d^6*g^3*i^3 + a^2*b^5*d^7*g^3*i^3)*B^2*x^5
 + 35*(b^7*c^3*d^4*g^3*i^3 + 9*a*b^6*c^2*d^5*g^3*i^3 + 9*a^2*b^5*c*d^6*g^3*
i^3 + a^3*b^4*d^7*g^3*i^3)*B^2*x^4 + 140*(a*b^6*c^3*d^4*g^3*i^3 + 3*a^2*b^5
*c^2*d^5*g^3*i^3 + a^3*b^4*c*d^6*g^3*i^3)*B^2*x^3 + 210*(a^2*b^5*c^3*d^4*g^
3*i^3 + a^3*b^4*c^2*d^5*g^3*i^3)*B^2*x^2)*log((b*x + a)^n)^2 + 18*(20*B^2*b
^7*d^7*g^3*i^3*x^7 + 140*B^2*a^3*b^4*c^3*d^4*g^3*i^3*x + 70*(b^7*c*d^6*g^3*
i^3 + a*b^6*d^7*g^3*i^3)*B^2*x^6 + 84*(b^7*c^2*d^5*g^3*i^3 + 3*a*b^6*c*d^6*
g^3*i^3 + a^2*b^5*d^7*g^3*i^3)*B^2*x^5 + 35*(b^7*c^3*d^4*g^3*i^3 + 9*a*b^6*
c^2*d^5*g^3*i^3 + 9*a^2*b^5*c*d^6*g^3*i^3 + a^3*b^4*d^7*g^3*i^3)*B^2*x^4 +
140*(a*b^6*c^3*d^4*g^3*i^3 + 3*a^2*b^5*c^2*d^5*g^3*i^3 + a^3*b^4*c*d^6*g^3*
i^3)*B^2*x^3 + 210*(a^2*b^5*c^3*d^4*g^3*i^3 + a^3*b^4*c^2*d^5*g^3*i^3)*B^2*
x^2)*log((d*x + c)^n)^2 + 6*(120*B^2*b^7*d^7*g^3*i^3*x^7*log(e) - 20*((g^3*
i^3*n - 21*g^3*i^3*log(e))*b^7*c*d^6 - (g^3*i^3*n + 21*g^3*i^3*log(e))*a*b^
6*d^7)*B^2*x^6 + 12*(126*a*b^6*c*d^6*g^3*i^3*log(e) - (5*g^3*i^3*n - 42*g^3
*i^3*log(e))*b^7*c^2*d^5 + (5*g^3*i^3*n + 42*g^3*i^3*log(e))*a^2*b^5*d^7)*B
^2*x^5 - 3*((17*g^3*i^3*n - 70*g^3*i^3*log(e))*b^7*c^3*d^4 + 7*(7*g^3*i^3*n
 - 90*g^3*i^3*log(e))*a*b^6*c^2*d^5 - 7*(7*g^3*i^3*n + 90*g^3*i^3*log(e))*a
^2*b^5*c*d^6 - (17*g^3*i^3*n + 70*g^3*i^3*log(e))*a^3*b^4*d^7)*B^2*x^4 - 2*
(b^7*c^4*d^3*g^3*i^3*n - a^4*b^3*d^7*g^3*i^3*n - 1260*a^2*b^5*c^2*d^5*g^3*i
^3*log(e) + 14*(7*g^3*i^3*n - 30*g^3*i^3*log(e))*a*b^6*c^3*d^4 - 14*(7*g^3*
i^3*n + 30*g^3*i^3*log(e))*a^3*b^4*c*d^6)*B^2*x^3 + 3*(b^7*c^5*d^2*g^3*i^3*
n - 7*a*b^6*c^4*d^3*g^3*i^3*n + 7*a^4*b^3*c*d^6*g^3*i^3*n - a^5*b^2*d^7*g^3
```

```
*i^3*n - 84*(g^3*i^3*n - 5*g^3*i^3*log(e))*a^2*b^5*c^3*d^4 + 84*(g^3*i^3*n
+ 5*g^3*i^3*log(e))*a^3*b^4*c^2*d^5)*B^2*x^2 - 6*(b^7*c^6*d*g^3*i^3*n - 7*a
*b^6*c^5*d^2*g^3*i^3*n + 21*a^2*b^5*c^4*d^3*g^3*i^3*n - 21*a^4*b^3*c^2*d^5*
g^3*i^3*n + 7*a^5*b^2*c*d^6*g^3*i^3*n - a^6*b*d^7*g^3*i^3*n - 140*a^3*b^4*c
^3*d^4*g^3*i^3*log(e))*B^2*x + 6*(35*a^4*b^3*c^3*d^4*g^3*i^3*n - 21*a^5*b^2
*c^2*d^5*g^3*i^3*n + 7*a^6*b*c*d^6*g^3*i^3*n - a^7*d^7*g^3*i^3*n)*B^2*log(b
*x + a) + 6*(b^7*c^7*g^3*i^3*n - 7*a*b^6*c^6*d*g^3*i^3*n + 21*a^2*b^5*c^5*d
^2*g^3*i^3*n - 35*a^3*b^4*c^4*d^3*g^3*i^3*n)*B^2*log(d*x + c))*log((b*x + a
)^n) - 6*(120*B^2*b^7*d^7*g^3*i^3*x^7*log(e) - 20*((g^3*i^3*n - 21*g^3*i^3*
log(e))*b^7*c*d^6 - (g^3*i^3*n + 21*g^3*i^3*log(e))*a*b^6*d^7)*B^2*x^6 + 12
*(126*a*b^6*c*d^6*g^3*i^3*log(e) - (5*g^3*i^3*n - 42*g^3*i^3*log(e))*b^7*c^
2*d^5 + (5*g^3*i^3*n + 42*g^3*i^3*log(e))*a^2*b^5*d^7)*B^2*x^5 - 3*((17*g^3
*i^3*n - 70*g^3*i^3*log(e))*b^7*c^3*d^4 + 7*(7*g^3*i^3*n - 90*g^3*i^3*log(e
))*a*b^6*c^2*d^5 - 7*(7*g^3*i^3*n + 90*g^3*i^3*log(e))*a^2*b^5*c*d^6 - (17*
g^3*i^3*n + 70*g^3*i^3*log(e))*a^3*b^4*d^7)*B^2*x^4 - 2*(b^7*c^4*d^3*g^3*i^
3*n - a^4*b^3*d^7*g^3*i^3*n - 1260*a^2*b^5*c^2*d^5*g^3*i^3*log(e) + 14*(7*g
^3*i^3*n - 30*g^3*i^3*log(e))*a*b^6*c^3*d^4 - 14*(7*g^3*i^3*n + 30*g^3*i^3*
log(e))*a^3*b^4*c*d^6)*B^2*x^3 + 3*(b^7*c^5*d^2*g^3*i^3*n - 7*a*b^6*c^4*d^3
*g^3*i^3*n + 7*a^4*b^3*c*d^6*g^3*i^3*n - a^5*b^2*d^7*g^3*i^3*n - 84*(g^3*i^
3*n - 5*g^3*i^3*log(e))*a^2*b^5*c^3*d^4 + 84*(g^3*i^3*n + 5*g^3*i^3*log(e))
*a^3*b^4*c^2*d^5)*B^2*x^2 - 6*(b^7*c^6*d*g^3*i^3*n - 7*a*b^6*c^5*d^2*g^3*i^
3*n + 21*a^2*b^5*c^4*d^3*g^3*i^3*n - 21*a^4*b^3*c^2*d^5*g^3*i^3*n + 7*a^5*b
^2*c*d^6*g^3*i^3*n - a^6*b*d^7*g^3*i^3*n - 140*a^3*b^4*c^3*d^4*g^3*i^3*log(
e))*B^2*x + 6*(35*a^4*b^3*c^3*d^4*g^3*i^3*n - 21*a^5*b^2*c^2*d^5*g^3*i^3*n
+ 7*a^6*b*c*d^6*g^3*i^3*n - a^7*d^7*g^3*i^3*n)*B^2*log(b*x + a) + 6*(b^7*c^
7*g^3*i^3*n - 7*a*b^6*c^6*d*g^3*i^3*n + 21*a^2*b^5*c^5*d^2*g^3*i^3*n - 35*a
^3*b^4*c^4*d^3*g^3*i^3*n)*B^2*log(d*x + c) + 6*(20*B^2*b^7*d^7*g^3*i^3*x^7
+ 140*B^2*a^3*b^4*c^3*d^4*g^3*i^3*x + 70*(b^7*c*d^6*g^3*i^3 + a*b^6*d^7*g^3
*i^3)*B^2*x^6 + 84*(b^7*c^2*d^5*g^3*i^3 + 3*a*b^6*c*d^6*g^3*i^3 + a^2*b^5*d
^7*g^3*i^3)*B^2*x^5 + 35*(b^7*c^3*d^4*g^3*i^3 + 9*a*b^6*c^2*d^5*g^3*i^3 + 9
*a^2*b^5*c*d^6*g^3*i^3 + a^3*b^4*d^7*g^3*i^3)*B^2*x^4 + 140*(a*b^6*c^3*d^4*
g^3*i^3 + 3*a^2*b^5*c^2*d^5*g^3*i^3 + a^3*b^4*c*d^6*g^3*i^3)*B^2*x^3 + 210*
(a^2*b^5*c^3*d^4*g^3*i^3 + a^3*b^4*c^2*d^5*g^3*i^3)*B^2*x^2)*log((b*x + a)^
n))*log((d*x + c)^n))/(b^4*d^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a g+b g x\right)^{3} (c i+d i x)^{3} \left(A+B \ln \left(e \left(\frac{a+b x}{c+d x}\right)^{n}\right)\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^
2,x)
```

```
[Out] int((a*g + b*g*x)^3*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2
,x)
```

```
[Out] Timed out
```

3.179 $\int (ag+bgx)^2(ci+dix)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=976

$$\frac{Bg^2i^3n\left(2A+3Bn+2B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\log\left(\frac{bc-ad}{b(c+dx)}\right)(bc-ad)^6}{60b^4d^3}+\frac{B^2g^2i^3n^2\log\left(\frac{a+bx}{c+dx}\right)(bc-ad)^6}{36b^4d^3}+\frac{11B^2g^2i^3n^2\log}{18}$$

```
[Out] -7/180*B^2*(-a*d+b*c)^5*g^2*i^3*n^2*x/b^3/d^2-7/360*B^2*(-a*d+b*c)^4*g^2*i^
3*n^2*(d*x+c)^2/b^2/d^3-1/60*B^2*(-a*d+b*c)^3*g^2*i^3*n^2*(d*x+c)^3/b/d^3+1
/60*B^2*(-a*d+b*c)^2*g^2*i^3*n^2*(d*x+c)^4/d^3-1/60*B*(-a*d+b*c)^4*g^2*i^3*
n*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^4/d-1/30*B*(-a*d+b*c)^3*g^2*i
^3*n*(b*x+a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^4-1/10*B*(-a*d+b*c)^4*g^2*
i^3*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/d^3+1/45*B*(-a*d+b*c)^3
*g^2*i^3*n*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b/d^3+7/60*B*(-a*d+b*c
)^2*g^2*i^3*n*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^3-1/15*b*B*(-a*d+
b*c)*g^2*i^3*n*(d*x+c)^5*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^3+1/60*(-a*d+b*c
)^3*g^2*i^3*(b*x+a)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^4+1/20*(-a*d+b*c)
^2*g^2*i^3*(b*x+a)^3*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^3+1/10*(-a
*d+b*c)*g^2*i^3*(b*x+a)^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1
/6*g^2*i^3*(b*x+a)^3*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b+1/60*B*(
-a*d+b*c)^5*g^2*i^3*n*(b*x+a)*(2*A+B*n+2*B*ln(e*((b*x+a)/(d*x+c))^n))/b^4/d
^2+1/60*B*(-a*d+b*c)^6*g^2*i^3*n*(2*A+3*B*n+2*B*ln(e*((b*x+a)/(d*x+c))^n))*
ln((-a*d+b*c)/b/(d*x+c))/b^4/d^3+1/36*B^2*(-a*d+b*c)^6*g^2*i^3*n^2*ln((b*x+
a)/(d*x+c))/b^4/d^3+11/180*B^2*(-a*d+b*c)^6*g^2*i^3*n^2*ln(d*x+c)/b^4/d^3+1
/30*B^2*(-a*d+b*c)^6*g^2*i^3*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/d^3
```

Rubi [A] time = 3.20, antiderivative size = 886, normalized size of antiderivative = 0.91, number of steps used = 83, number of rules used = 13, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.289, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2g^2i^3n^2\log^2(a+bx)(bc-ad)^6}{60b^4d^3}-\frac{B^2g^2i^3n^2\log(a+bx)(bc-ad)^6}{45b^4d^3}-\frac{Bg^2i^3n\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)(bc}{30b^4d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^
2,x]
```

```
[Out] -(A*B*(b*c - a*d)^5*g^2*i^3*n*x)/(30*b^3*d^2) - (B^2*(b*c - a*d)^5*g^2*i^3*
n^2*x)/(45*b^3*d^2) - (7*B^2*(b*c - a*d)^4*g^2*i^3*n^2*(c + d*x)^2)/(360*b^
2*d^3) - (B^2*(b*c - a*d)^3*g^2*i^3*n^2*(c + d*x)^3)/(60*b*d^3) + (B^2*(b*c
 - a*d)^2*g^2*i^3*n^2*(c + d*x)^4)/(60*d^3) - (B^2*(b*c - a*d)^6*g^2*i^3*n^
2*Log[a + b*x])/(45*b^4*d^3) + (B^2*(b*c - a*d)^6*g^2*i^3*n^2*Log[a + b*x]^
2)/(60*b^4*d^3) - (B^2*(b*c - a*d)^5*g^2*i^3*n*(a + b*x)*Log[e*((a + b*x)/(
c + d*x))^n])/(30*b^4*d^2) - (B*(b*c - a*d)^4*g^2*i^3*n*(c + d*x)^2*(A + B*
Log[e*((a + b*x)/(c + d*x))^n]))/(60*b^2*d^3) - (B*(b*c - a*d)^3*g^2*i^3*n*
(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(90*b*d^3) + (7*B*(b*c
- a*d)^2*g^2*i^3*n*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(60*
d^3) - (b*B*(b*c - a*d)*g^2*i^3*n*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c +
d*x))^n]))/(15*d^3) - (B*(b*c - a*d)^6*g^2*i^3*n*Log[a + b*x]*(A + B*Log[e*
((a + b*x)/(c + d*x))^n]))/(30*b^4*d^3) + ((b*c - a*d)^2*g^2*i^3*(c + d*x)^
4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(4*d^3) - (2*b*(b*c - a*d)*g^2*
i^3*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(5*d^3) + (b^2*g^
2*i^3*(c + d*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(6*d^3) + (B^2*
(b*c - a*d)^6*g^2*i^3*n^2*Log[c + d*x])/(30*b^4*d^3) - (B^2*(b*c - a*d)^6*g
```

```
^2*i^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(30*b^4*d^3) - (B^2
*(b*c - a*d)^6*g^2*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(30*b^
4*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (179c+179dx)^3(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx = \int \left(\frac{(-bc+ad)^2g^2(179c+179dx)^3\left(A+B\log\right.}{d^2}\right.$$

$$= \frac{(b^2g^2)\int(179c+179dx)^5\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{32041d^2}$$

$$= \frac{5735339(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(e\left(\right.\right.\right.}{4d^3}$$

$$= \frac{5735339(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(e\left(\right.\right.\right.}{4d^3}$$

$$= \frac{5735339(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(e\left(\right.\right.\right.}{4d^3}$$

$$= \frac{5735339(bc-ad)^2g^2(c+dx)^4\left(A+B\log\left(e\left(\right.\right.\right.}{4d^3}$$

$$= -\frac{5735339AB(bc-ad)^5g^2nx}{30b^3d^2} - \frac{5735339B(bc}{}$$

$$= -\frac{5735339AB(bc-ad)^5g^2nx}{30b^3d^2} - \frac{5735339B^2(b}{}$$

$$= -\frac{5735339AB(bc-ad)^5g^2nx}{30b^3d^2} - \frac{5735339B^2(b}{}$$

$$= -\frac{5735339AB(bc-ad)^5g^2nx}{30b^3d^2} - \frac{5735339B^2(b}{45b}$$

$$= -\frac{5735339AB(bc-ad)^5g^2nx}{30b^3d^2} - \frac{5735339B^2(b}{45b}$$

$$= -\frac{5735339AB(bc-ad)^5g^2nx}{30b^3d^2} - \frac{5735339B^2(b}{45b}$$

Mathematica [A] time = 1.56, size = 1627, normalized size = 1.67

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n])^2,x]
```

```
[Out] (g^2*i^3*(15*(b*c - a*d)^2*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n
])^2 - 24*b*(b*c - a*d)*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^
```

```
2 + 10*b^2*(c + d*x)^6*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - (5*B*(b*c
 - a*d)^3*n*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*n*(b*d*x + (b*c -
a*d)*Log[a + b*x]) - B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2
 + 2*(b*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a
+ b*x)/(c + d*x))^n] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[e*((a + b*x
)/(c + d*x))^n]) + 2*b^3*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
 + 6*(b*c - a*d)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*
B*(b*c - a*d)^3*n*Log[c + d*x] - 3*B*(b*c - a*d)^3*n*(Log[a + b*x]*(Log[a +
 b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b
*c) + a*d)])))/b^4 + (2*B*(b*c - a*d)^2*n*(24*A*b*d*(b*c - a*d)^3*x - 12*B*
(b*c - a*d)^3*n*(b*d*x + (b*c - a*d)*Log[a + b*x]) - 4*B*(b*c - a*d)^2*n*(2
*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) - B*(b
*c - a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*
(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]) + 24*B*d*(b*c - a*d)^3*(a + b*x
)*Log[e*((a + b*x)/(c + d*x))^n] + 12*b^2*(b*c - a*d)^2*(c + d*x)^2*(A + B*
Log[e*((a + b*x)/(c + d*x))^n]) + 8*b^3*(b*c - a*d)*(c + d*x)^3*(A + B*Log[
e*((a + b*x)/(c + d*x))^n]) + 6*b^4*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n]) + 24*(b*c - a*d)^4*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]) - 24*B*(b*c - a*d)^4*n*Log[c + d*x] - 12*B*(b*c - a*d)^4*n*(Log[a +
 b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(
a + b*x))/(-(b*c) + a*d)])))/b^4 - (B*(b*c - a*d)*n*(120*A*b*d*(b*c - a*d)^
4*x - 60*B*(b*c - a*d)^4*n*(b*d*x + (b*c - a*d)*Log[a + b*x]) - 20*B*(b*c -
 a*d)^3*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a +
b*x]) - 5*B*(b*c - a*d)^2*n*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c +
 d*x)^2 + 2*b^3*(c + d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]) - 2*B*(b*c - a*
d)*n*(12*b*d*(b*c - a*d)^3*x + 6*b^2*(b*c - a*d)^2*(c + d*x)^2 + 4*b^3*(b*c
 - a*d)*(c + d*x)^3 + 3*b^4*(c + d*x)^4 + 12*(b*c - a*d)^4*Log[a + b*x]) +
120*B*d*(b*c - a*d)^4*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n] + 60*b^2*(b*
c - a*d)^3*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 40*b^3*(b*c
 - a*d)^2*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 30*b^4*(b*c
- a*d)*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 24*b^5*(c + d*x
)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 120*(b*c - a*d)^5*Log[a + b*x]
*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 120*B*(b*c - a*d)^5*n*Log[c + d*x
] - 60*B*(b*c - a*d)^5*n*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/
(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])))/(6*b^4)))/(60
*d^3)
```

fricas [F] time = 1.05, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2b^2d^3g^2i^3x^5 + A^2a^2c^3g^2i^3 + \left(3\,A^2b^2cd^2 + 2\,A^2abd^3\right)g^2i^3x^4 + \left(3\,A^2b^2c^2d + 6\,A^2abcd^2 + A^2a^2d^3\right)g^2i^3x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="fricas")
```

```
[Out] integral(A^2*b^2*d^3*g^2*i^3*x^5 + A^2*a^2*c^3*g^2*i^3 + (3*A^2*b^2*c*d^2 +
 2*A^2*a*b*d^3)*g^2*i^3*x^4 + (3*A^2*b^2*c^2*d + 6*A^2*a*b*c*d^2 + A^2*a^2*
d^3)*g^2*i^3*x^3 + (A^2*b^2*c^3 + 6*A^2*a*b*c^2*d + 3*A^2*a^2*c*d^2)*g^2*i^
3*x^2 + (2*A^2*a*b*c^3 + 3*A^2*a^2*c^2*d)*g^2*i^3*x + (B^2*b^2*d^3*g^2*i^3*
x^5 + B^2*a^2*c^3*g^2*i^3 + (3*B^2*b^2*c*d^2 + 2*B^2*a*b*d^3)*g^2*i^3*x^4 +
 (3*B^2*b^2*c^2*d + 6*B^2*a*b*c*d^2 + B^2*a^2*d^3)*g^2*i^3*x^3 + (B^2*b^2*c
^3 + 6*B^2*a*b*c^2*d + 3*B^2*a^2*c*d^2)*g^2*i^3*x^2 + (2*B^2*a*b*c^3 + 3*B^
2*a^2*c^2*d)*g^2*i^3*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^2*d^3*g
^2*i^3*x^5 + A*B*a^2*c^3*g^2*i^3 + (3*A*B*b^2*c*d^2 + 2*A*B*a*b*d^3)*g^2*i^
3*x^4 + (3*A*B*b^2*c^2*d + 6*A*B*a*b*c*d^2 + A*B*a^2*d^3)*g^2*i^3*x^3 + (A*
B*b^2*c^3 + 6*A*B*a*b*c^2*d + 3*A*B*a^2*c*d^2)*g^2*i^3*x^2 + (2*A*B*a*b*c^3
 + 3*A*B*a^2*c^2*d)*g^2*i^3*x)*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{2} \left(dix+ci\right)^{3} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^2*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 5.59, size = 5931, normalized size = 6.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x,
 algorithm="maxima")
```

```
[Out] 1/3*A*B*b^2*d^3*g^2*i^3*x^6*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/6*A^
2*b^2*d^3*g^2*i^3*x^6 + 6/5*A*B*b^2*c*d^2*g^2*i^3*x^5*log(e*(b*x/(d*x + c)
+ a/(d*x + c))^n) + 4/5*A*B*a*b*d^3*g^2*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d
*x + c))^n) + 3/5*A^2*b^2*c*d^2*g^2*i^3*x^5 + 2/5*A^2*a*b*d^3*g^2*i^3*x^5 +
 3/2*A*B*b^2*c^2*d*g^2*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3*A
*B*a*b*c*d^2*g^2*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*A*B*a
^2*d^3*g^2*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/4*A^2*b^2*c^2
*d*g^2*i^3*x^4 + 3/2*A^2*a*b*c*d^2*g^2*i^3*x^4 + 1/4*A^2*a^2*d^3*g^2*i^3*x^
4 + 2/3*A*B*b^2*c^3*g^2*i^3*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 4*
A*B*a*b*c^2*d*g^2*i^3*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*A*B*a^
2*c*d^2*g^2*i^3*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*A^2*b^2*c^
3*g^2*i^3*x^3 + 2*A^2*a*b*c^2*d*g^2*i^3*x^3 + A^2*a^2*c*d^2*g^2*i^3*x^3 + 2
*A*B*a*b*c^3*g^2*i^3*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3*A*B*a^2
*c^2*d*g^2*i^3*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a*b*c^3*g^2
*i^3*x^2 + 3/2*A^2*a^2*c^2*d*g^2*i^3*x^2 - 1/180*A*B*b^2*d^3*g^2*i^3*n*(60*
a^6*log(b*x + a)/b^6 - 60*c^6*log(d*x + c)/d^6 + (12*(b^5*c*d^4 - a*b^4*d^5
)*x^5 - 15*(b^5*c^2*d^3 - a^2*b^3*d^5)*x^4 + 20*(b^5*c^3*d^2 - a^3*b^2*d^5)
*x^3 - 30*(b^5*c^4*d - a^4*b*d^5)*x^2 + 60*(b^5*c^5 - a^5*d^5)*x)/(b^5*d^5)
) + 1/10*A*B*b^2*c*d^2*g^2*i^3*n*(12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x
+ c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x
^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) +
 1/15*A*B*a*b*d^3*g^2*i^3*n*(12*a^5*log(b*x + a)/b^5 - 12*c^5*log(d*x + c)/
d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^3 +
6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 - a^4*d^4)*x)/(b^4*d^4)) - 1/4*
A*B*b^2*c^2*d*g^2*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 +
(2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3
 - a^3*d^3)*x)/(b^3*d^3)) - 1/2*A*B*a*b*c*d^2*g^2*i^3*n*(6*a^4*log(b*x + a)
/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2
*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/12*A*B*a^2*d^
3*g^2*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^
```

2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + 1/3*A*B*b^2*c^3*g^2*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + 2*A*B*a*b*c^2*d*g^2*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + A*B*a^2*c*d^2*g^2*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - 2*A*B*a*b*c^3*g^2*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 3*A*B*a^2*c^2*d*g^2*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + 2*A*B*a^2*c^3*g^2*i^3*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + 2*A*B*a^2*c^3*g^2*i^3*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a^2*c^3*g^2*i^3*x - 1/180*(74*a^3*b^2*c^3*d^3*g^2*i^3*n^2 - 33*a^4*b*c^2*d^4*g^2*i^3*n^2 + 6*a^5*c*d^5*g^2*i^3*n^2 - 2*(g^2*i^3*n^2 - 3*g^2*i^3*n*log(e))*b^5*c^6 + 18*(g^2*i^3*n^2 - 2*g^2*i^3*n*log(e))*a*b^4*c^5*d - 9*(7*g^2*i^3*n^2 - 10*g^2*i^3*n*log(e))*a^2*b^3*c^4*d^2)*B^2*log(d*x + c)/(b^3*d^3) - 1/30*(b^6*c^6*g^2*i^3*n^2 - 6*a*b^5*c^5*d*g^2*i^3*n^2 + 15*a^2*b^4*c^4*d^2*g^2*i^3*n^2 - 20*a^3*b^3*c^3*d^3*g^2*i^3*n^2 + 15*a^4*b^2*c^2*d^4*g^2*i^3*n^2 - 6*a^5*b*c*d^5*g^2*i^3*n^2 + a^6*d^6*g^2*i^3*n^2)*(log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b^4*d^3) + 1/360*(60*B^2*b^6*d^6*g^2*i^3*x^6*log(e)^2 - 24*((g^2*i^3*n*log(e) - 9*g^2*i^3*log(e)^2)*b^6*c*d^5 - (g^2*i^3*n*log(e) + 6*g^2*i^3*log(e)^2)*a*b^5*d^6)*B^2*x^5 + 6*((g^2*i^3*n^2 - 13*g^2*i^3*n*log(e) + 45*g^2*i^3*log(e)^2)*b^6*c^2*d^4 - 2*(g^2*i^3*n^2 - 3*g^2*i^3*n*log(e) - 45*g^2*i^3*log(e)^2)*a*b^5*c*d^5 + (g^2*i^3*n^2 + 7*g^2*i^3*n*log(e) + 15*g^2*i^3*log(e)^2)*a^2*b^4*d^6)*B^2*x^4 + 2*((9*g^2*i^3*n^2 - 38*g^2*i^3*n*log(e) + 60*g^2*i^3*log(e)^2)*b^6*c^3*d^3 - 3*(5*g^2*i^3*n^2 + 14*g^2*i^3*n*log(e) - 120*g^2*i^3*log(e)^2)*a*b^5*c^2*d^4 + 3*(g^2*i^3*n^2 + 26*g^2*i^3*n*log(e) + 60*g^2*i^3*log(e)^2)*a^2*b^4*c*d^5 + (3*g^2*i^3*n^2 + 2*g^2*i^3*n*log(e))*a^3*b^3*d^6)*B^2*x^3 + ((11*g^2*i^3*n^2 - 6*g^2*i^3*n*log(e))*b^6*c^4*d^2 + 2*(5*g^2*i^3*n^2 - 102*g^2*i^3*n*log(e) + 180*g^2*i^3*log(e)^2)*a*b^5*c^3*d^3 - 60*(g^2*i^3*n^2 - 3*g^2*i^3*n*log(e) - 9*g^2*i^3*log(e)^2)*a^2*b^4*c^2*d^4 + 2*(23*g^2*i^3*n^2 + 18*g^2*i^3*n*log(e))*a^3*b^3*c*d^5 - (7*g^2*i^3*n^2 + 6*g^2*i^3*n*log(e))*a^4*b^2*d^6)*B^2*x^2 - 6*(20*a^3*b^3*c^3*d^3*g^2*i^3*n^2 - 15*a^4*b^2*c^2*d^4*g^2*i^3*n^2 + 6*a^5*b*c*d^5*g^2*i^3*n^2 - a^6*d^6*g^2*i^3*n^2)*B^2*log(b*x + a)^2 + 12*(b^6*c^6*g^2*i^3*n^2 - 6*a*b^5*c^5*d*g^2*i^3*n^2 + 15*a^2*b^4*c^4*d^2*g^2*i^3*n^2)*B^2*log(b*x + a)*log(d*x + c) - 6*(b^6*c^6*g^2*i^3*n^2 - 6*a*b^5*c^5*d*g^2*i^3*n^2 + 15*a^2*b^4*c^4*d^2*g^2*i^3*n^2)*B^2*log(d*x + c)^2 - 2*(2*(4*g^2*i^3*n^2 - 3*g^2*i^3*n*log(e))*b^6*c^5*d - 3*(17*g^2*i^3*n^2 - 12*g^2*i^3*n*log(e))*a*b^5*c^4*d^2 + (97*g^2*i^3*n^2 + 30*g^2*i^3*n*log(e) - 180*g^2*i^3*log(e)^2)*a^2*b^4*c^3*d^3 - (77*g^2*i^3*n^2 + 90*g^2*i^3*n*log(e))*a^3*b^3*c^2*d^4 + 9*(3*g^2*i^3*n^2 + 4*g^2*i^3*n*log(e))*a^4*b^2*c*d^5 - 2*(2*g^2*i^3*n^2 + 3*g^2*i^3*n*log(e))*a^5*b*d^6)*B^2*x + 2*(6*a*b^5*c^5*d*g^2*i^3*n^2 - 33*a^2*b^4*c^4*d^2*g^2*i^3*n^2 + 2*(17*g^2*i^3*n^2 + 60*g^2*i^3*n*log(e))*a^3*b^3*c^3*d^3 - 3*(g^2*i^3*n^2 + 30*g^2*i^3*n*log(e))*a^4*b^2*c^2*d^4 - 6*(g^2*i^3*n^2 - 6*g^2*i^3*n*log(e))*a^5*b*c*d^5 + 2*(g^2*i^3*n^2 - 3*g^2*i^3*n*log(e))*a^6*d^6)*B^2*log(b*x + a) + 6*(10*B^2*b^6*d^6*g^2*i^3*x^6 + 60*B^2*a^2*b^4*c^3*d^3*g^2*i^3*x + 12*(3*b^6*c*d^5*g^2*i^3 + 2*a*b^5*d^6*g^2*i^3)*B^2*x^5 + 15*(3*b^6*c^2*d^4*g^2*i^3 + 6*a*b^5*c*d^5*g^2*i^3 + a^2*b^4*d^6*g^2*i^3)*B^2*x^4 + 20*(b^6*c^3*d^3*g^2*i^3 + 6*a*b^5*c^2*d^4*g^2*i^3 + 3*a^2*b^4*c*d^5*g^2*i^3)*B^2*x^3 + 30*(2*a*b^5*c^3*d^3*g^2*i^3 + 3*a^2*b^4*c^2*d^4*g^2*i^3)*B^2*x^2)*log((b*x + a)^n)^2 + 6*(10*B^2*b^6*d^6*g^2*i^3*x^6 + 60*B^2*a^2*b^4*c^3*d^3*g^2*i^3*x + 12*(3*b^6*c*d^5*g^2*i^3 + 2*a*b^5*d^6*g^2*i^3)*B^2*x^5 + 15*(3*b^6*c^2*d^4*g^2*i^3 + 6*a*b^5*c*d^5*g^2*i^3 + a^2*b^4*d^6*g^2*i^3)*B^2*x^4 + 20*(b^6*c^3*d^3*g^2*i^3 + 6*a*b^5*c^2*d^4*g^2*i^3 + 3*a^2*b^4*c*d^5*g^2*i^3)*B^2*x^3 + 30*(2*a*b^5*c^3*d^3*g^2*i^3 + 3*a^2*b^4*c^2*d^4*g^2*i^3)*B^2*x^2)*log((d*x + c)^n)^2 + 2*(60*B^2*b^6*d^6*g^2*i^3*x^6*log(e) - 12*((g^2*i^3*n - 18*g^2*i^3*log(e))*b^6*c*d^5 - (g^2*i^3*n + 12*g^2*i^3*log(e))*a*b^5*d^6)*B^2*x^5 - 3*((13*g^2*i^3*n - 90*g^2*i^3*log(e))*b^6*c^2*d^4

```
 - 6*(g^2*i^3*n + 30*g^2*i^3*log(e))*a*b^5*c*d^5 - (7*g^2*i^3*n + 30*g^2*i^
3*log(e))*a^2*b^4*d^6)*B^2*x^4 + 2*(a^3*b^3*d^6*g^2*i^3*n - (19*g^2*i^3*n -
 60*g^2*i^3*log(e))*b^6*c^3*d^3 - 3*(7*g^2*i^3*n - 120*g^2*i^3*log(e))*a*b^
5*c^2*d^4 + 3*(13*g^2*i^3*n + 60*g^2*i^3*log(e))*a^2*b^4*c*d^5)*B^2*x^3 - 3
*(b^6*c^4*d^2*g^2*i^3*n - 6*a^3*b^3*c*d^5*g^2*i^3*n + a^4*b^2*d^6*g^2*i^3*n
 + 2*(17*g^2*i^3*n - 60*g^2*i^3*log(e))*a*b^5*c^3*d^3 - 30*(g^2*i^3*n + 6*g
^2*i^3*log(e))*a^2*b^4*c^2*d^4)*B^2*x^2 + 6*(b^6*c^5*d*g^2*i^3*n - 6*a*b^5*
c^4*d^2*g^2*i^3*n + 15*a^3*b^3*c^2*d^4*g^2*i^3*n - 6*a^4*b^2*c*d^5*g^2*i^3*
n + a^5*b*d^6*g^2*i^3*n - 5*(g^2*i^3*n - 12*g^2*i^3*log(e))*a^2*b^4*c^3*d^3
)*B^2*x + 6*(20*a^3*b^3*c^3*d^3*g^2*i^3*n - 15*a^4*b^2*c^2*d^4*g^2*i^3*n +
6*a^5*b*c*d^5*g^2*i^3*n - a^6*d^6*g^2*i^3*n)*B^2*log(b*x + a) - 6*(b^6*c^6*
g^2*i^3*n - 6*a*b^5*c^5*d*g^2*i^3*n + 15*a^2*b^4*c^4*d^2*g^2*i^3*n)*B^2*log
(d*x + c))*log((b*x + a)^n) - 2*(60*B^2*b^6*d^6*g^2*i^3*x^6*log(e) - 12*((g
^2*i^3*n - 18*g^2*i^3*log(e))*b^6*c*d^5 - (g^2*i^3*n + 12*g^2*i^3*log(e))*a
*b^5*d^6)*B^2*x^5 - 3*((13*g^2*i^3*n - 90*g^2*i^3*log(e))*b^6*c^2*d^4 - 6*(
g^2*i^3*n + 30*g^2*i^3*log(e))*a*b^5*c*d^5 - (7*g^2*i^3*n + 30*g^2*i^3*log(
e))*a^2*b^4*d^6)*B^2*x^4 + 2*(a^3*b^3*d^6*g^2*i^3*n - (19*g^2*i^3*n - 60*g^
2*i^3*log(e))*b^6*c^3*d^3 - 3*(7*g^2*i^3*n - 120*g^2*i^3*log(e))*a*b^5*c^2*
d^4 + 3*(13*g^2*i^3*n + 60*g^2*i^3*log(e))*a^2*b^4*c*d^5)*B^2*x^3 - 3*(b^6*
c^4*d^2*g^2*i^3*n - 6*a^3*b^3*c*d^5*g^2*i^3*n + a^4*b^2*d^6*g^2*i^3*n + 2*(
17*g^2*i^3*n - 60*g^2*i^3*log(e))*a*b^5*c^3*d^3 - 30*(g^2*i^3*n + 6*g^2*i^3
*log(e))*a^2*b^4*c^2*d^4)*B^2*x^2 + 6*(b^6*c^5*d*g^2*i^3*n - 6*a*b^5*c^4*d^
2*g^2*i^3*n + 15*a^3*b^3*c^2*d^4*g^2*i^3*n - 6*a^4*b^2*c*d^5*g^2*i^3*n + a^
5*b*d^6*g^2*i^3*n - 5*(g^2*i^3*n - 12*g^2*i^3*log(e))*a^2*b^4*c^3*d^3)*B^2*
x + 6*(20*a^3*b^3*c^3*d^3*g^2*i^3*n - 15*a^4*b^2*c^2*d^4*g^2*i^3*n + 6*a^5*
b*c*d^5*g^2*i^3*n - a^6*d^6*g^2*i^3*n)*B^2*log(b*x + a) - 6*(b^6*c^6*g^2*i^
3*n - 6*a*b^5*c^5*d*g^2*i^3*n + 15*a^2*b^4*c^4*d^2*g^2*i^3*n)*B^2*log(d*x +
 c) + 6*(10*B^2*b^6*d^6*g^2*i^3*x^6 + 60*B^2*a^2*b^4*c^3*d^3*g^2*i^3*x + 12
*(3*b^6*c*d^5*g^2*i^3 + 2*a*b^5*d^6*g^2*i^3)*B^2*x^5 + 15*(3*b^6*c^2*d^4*g^
2*i^3 + 6*a*b^5*c*d^5*g^2*i^3 + a^2*b^4*d^6*g^2*i^3)*B^2*x^4 + 20*(b^6*c^3*
d^3*g^2*i^3 + 6*a*b^5*c^2*d^4*g^2*i^3 + 3*a^2*b^4*c*d^5*g^2*i^3)*B^2*x^3 +
30*(2*a*b^5*c^3*d^3*g^2*i^3 + 3*a^2*b^4*c^2*d^4*g^2*i^3)*B^2*x^2)*log((b*x
+ a)^n))*log((d*x + c)^n))/(b^4*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a\,g+b\,g\,x\right)^2\,(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^
2,x)
```

```
[Out] int((a*g + b*g*x)^2*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2
,x)
```

```
[Out] Timed out
```

3.180 $\int (ag+bgx)(ci+dix)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=786

$$-\frac{Bgi^3n(bc-ad)^5\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A+Bn\right)}{10b^4d^2}-\frac{Bgi^3n(a+bx)(bc-ad)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{10b^4d}+$$

```
[Out] 1/60*B^2*(-a*d+b*c)^4*g*i^3*n^2*x/b^3/d+1/30*B^2*(-a*d+b*c)^3*g*i^3*n^2*(d*
x+c)^2/b^2/d^2+1/30*B^2*(-a*d+b*c)^2*g*i^3*n^2*(d*x+c)^3/b/d^2-1/10*B*(-a*d
+b*c)^4*g*i^3*n*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^4/d-1/10*B*(-a*d+
b*c)^3*g*i^3*n*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^4+3/20*B*(-a*d+b
*c)^3*g*i^3*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/d^2+1/30*B*(-a*
d+b*c)^2*g*i^3*n*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b/d^2-1/10*B*(-a
*d+b*c)*g*i^3*n*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^2+1/20*(-a*d+b*
c)^3*g*i^3*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^4+1/10*(-a*d+b*c)^
2*g*i^3*(b*x+a)^2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^3+3/20*(-a*d+
b*c)*g*i^3*(b*x+a)^2*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^2+1/5*g*
i^3*(b*x+a)^2*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b-1/10*B*(-a*d+b*
c)^5*g*i^3*n*(A+B*n+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/b
^4/d^2-1/12*B^2*(-a*d+b*c)^5*g*i^3*n^2*ln((b*x+a)/(d*x+c))/b^4/d^2-11/60*B^
2*(-a*d+b*c)^5*g*i^3*n^2*ln(d*x+c)/b^4/d^2-1/10*B^2*(-a*d+b*c)^5*g*i^3*n^2*
polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/d^2
```

Rubi [A] time = 1.93, antiderivative size = 706, normalized size of antiderivative = 0.90, number of steps used = 52, number of rules used = 13, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.302$, Rules used = {2528, 2525, 12, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$\frac{B^2gi^3n^2(bc-ad)^5\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{10b^4d^2}+\frac{Bgi^3n(bc-ad)^5\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{10b^4d^2}+\frac{Bgi^3n(c+dx)^2(b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,
x]
```

```
[Out] (A*B*(b*c - a*d)^4*g*i^3*n*x)/(10*b^3*d) + (B^2*(b*c - a*d)^4*g*i^3*n^2*x)/
(60*b^3*d) + (B^2*(b*c - a*d)^3*g*i^3*n^2*(c + d*x)^2)/(30*b^2*d^2) + (B^2*
(b*c - a*d)^2*g*i^3*n^2*(c + d*x)^3)/(30*b*d^2) + (B^2*(b*c - a*d)^5*g*i^3*
n^2*Log[a + b*x])/(60*b^4*d^2) - (B^2*(b*c - a*d)^5*g*i^3*n^2*Log[a + b*x]^
2)/(20*b^4*d^2) + (B^2*(b*c - a*d)^4*g*i^3*n*(a + b*x)*Log[e*((a + b*x)/(c
+ d*x))^n])/(10*b^4*d) + (B*(b*c - a*d)^3*g*i^3*n*(c + d*x)^2*(A + B*Log[e*
((a + b*x)/(c + d*x))^n]))/(20*b^2*d^2) + (B*(b*c - a*d)^2*g*i^3*n*(c + d*x
)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(30*b*d^2) - (B*(b*c - a*d)*g*i
^3*n*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(10*d^2) + (B*(b*c
 - a*d)^5*g*i^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(10*
b^4*d^2) - ((b*c - a*d)*g*i^3*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n])^2)/(4*d^2) + (b*g*i^3*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^
n])^2)/(5*d^2) - (B^2*(b*c - a*d)^5*g*i^3*n^2*Log[c + d*x])/(10*b^4*d^2) +
(B^2*(b*c - a*d)^5*g*i^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(
10*b^4*d^2) + (B^2*(b*c - a*d)^5*g*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c
- a*d))])/(10*b^4*d^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (180c+180dx)^3(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\,dx = \int\left(\frac{(-bc+ad)g(180c+180dx)^3\left(A+B\log\left(e\right.\right.}{d}\right.$$

$$= \frac{(bg)\int(180c+180dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{180d}$$

$$= -\frac{1458000(bc-ad)g(c+dx)^4\left(A+B\log\left(e\left(\frac{a\cdot}{c\cdot}\right.\right.\right.}{d^2}$$

$$= -\frac{1458000(bc-ad)g(c+dx)^4\left(A+B\log\left(e\left(\frac{a\cdot}{c\cdot}\right.\right.\right.}{d^2}$$

$$= -\frac{1458000(bc-ad)g(c+dx)^4\left(A+B\log\left(e\left(\frac{a\cdot}{c\cdot}\right.\right.\right.}{d^2}$$

$$= -\frac{1458000(bc-ad)g(c+dx)^4\left(A+B\log\left(e\left(\frac{a\cdot}{c\cdot}\right.\right.\right.}{d^2}$$

$$= \frac{583200AB(bc-ad)^4gnx}{b^3d} + \frac{291600B(bc-ad)^3}{}$$

$$= \frac{583200AB(bc-ad)^4gnx}{b^3d} + \frac{583200B^2(bc-ad}{}$$

$$= \frac{583200AB(bc-ad)^4gnx}{b^3d} + \frac{583200B^2(bc-ad}{}$$

$$= \frac{583200AB(bc-ad)^4gnx}{b^3d} + \frac{97200B^2(bc-ad)^4}{b^3d}$$

$$= \frac{583200AB(bc-ad)^4gnx}{b^3d} + \frac{97200B^2(bc-ad)^4}{b^3d}$$

$$= \frac{583200AB(bc-ad)^4gnx}{b^3d} + \frac{97200B^2(bc-ad)^4}{b^3d}$$

Mathematica [A] time = 0.76, size = 945, normalized size = 1.20

$$\frac{gi^3\left(4b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2(c+dx)^5-5(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2(c+dx)^4+\frac{5B(bc-ad)^2n\left(6\log(a+b\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^
n])^2,x]
```

```
[Out] (g*i^3*(-5*(b*c - a*d)*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2
 + 4*b*(c + d*x)^5*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + (5*B*(b*c - a
*d)^2*n*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*n*(b*d*x + (b*c - a*d)
*Log[a + b*x]) - B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2
*(b*c - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b*
x)/(c + d*x))^n] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n]) + 2*b^3*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6
*(b*c - a*d)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*B*(b
*c - a*d)^3*n*Log[c + d*x] - 3*B*(b*c - a*d)^3*n*(Log[a + b*x]*(Log[a + b*x
] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c)
+ a*d)])))/(3*b^4) - (B*(b*c - a*d)*n*(24*A*b*d*(b*c - a*d)^3*x - 12*B*(b*c
 - a*d)^3*n*(b*d*x + (b*c - a*d)*Log[a + b*x]) - 4*B*(b*c - a*d)^2*n*(2*b*d
*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c - a*d)^2*Log[a + b*x]) - B*(b*c -
 a*d)*n*(6*b*d*(b*c - a*d)^2*x + 3*b^2*(b*c - a*d)*(c + d*x)^2 + 2*b^3*(c +
 d*x)^3 + 6*(b*c - a*d)^3*Log[a + b*x]) + 24*B*d*(b*c - a*d)^3*(a + b*x)*Lo
g[e*((a + b*x)/(c + d*x))^n] + 12*b^2*(b*c - a*d)^2*(c + d*x)^2*(A + B*Log[
e*((a + b*x)/(c + d*x))^n]) + 8*b^3*(b*c - a*d)*(c + d*x)^3*(A + B*Log[e*((
a + b*x)/(c + d*x))^n]) + 6*b^4*(c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]) + 24*(b*c - a*d)^4*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^
n]) - 24*B*(b*c - a*d)^4*n*Log[c + d*x] - 12*B*(b*c - a*d)^4*n*(Log[a + b*x
]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a +
b*x))/(-(b*c) + a*d)])))/(3*b^4)))/(20*d^2)
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2bd^3gi^3x^4 + A^2ac^3gi^3 + \left(3\,A^2bcd^2 + A^2ad^3\right)gi^3x^3 + 3\left(A^2bc^2d + A^2acd^2\right)gi^3x^2 + \left(A^2bc^3 + 3\,A^2ac^2d\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="fricas")
```

```
[Out] integral(A^2*b*d^3*g*i^3*x^4 + A^2*a*c^3*g*i^3 + (3*A^2*b*c*d^2 + A^2*a*d^3
)*g*i^3*x^3 + 3*(A^2*b*c^2*d + A^2*a*c*d^2)*g*i^3*x^2 + (A^2*b*c^3 + 3*A^2*
a*c^2*d)*g*i^3*x + (B^2*b*d^3*g*i^3*x^4 + B^2*a*c^3*g*i^3 + (3*B^2*b*c*d^2
+ B^2*a*d^3)*g*i^3*x^3 + 3*(B^2*b*c^2*d + B^2*a*c*d^2)*g*i^3*x^2 + (B^2*b*c
^3 + 3*B^2*a*c^2*d)*g*i^3*x)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b*d^
3*g*i^3*x^4 + A*B*a*c^3*g*i^3 + (3*A*B*b*c*d^2 + A*B*a*d^3)*g*i^3*x^3 + 3*(
A*B*b*c^2*d + A*B*a*c*d^2)*g*i^3*x^2 + (A*B*b*c^3 + 3*A*B*a*c^2*d)*g*i^3*x)
*log(e*((b*x + a)/(d*x + c))^n), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \left(bgx + ag\right)\left(dix + ci\right)^3 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)*(d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 5.49, size = 3724, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, a
lgorithm="maxima")
```

```
[Out] 2/5*A*B*b*d^3*g*i^3*x^5*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/5*A^2*b*
d^3*g*i^3*x^5 + 3/2*A*B*b*c*d^2*g*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c
))^n) + 1/2*A*B*a*d^3*g*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3/
4*A^2*b*c*d^2*g*i^3*x^4 + 1/4*A^2*a*d^3*g*i^3*x^4 + 2*A*B*b*c^2*d*g*i^3*x^3
*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 2*A*B*a*c*d^2*g*i^3*x^3*log(e*(b*
x/(d*x + c) + a/(d*x + c))^n) + A^2*b*c^2*d*g*i^3*x^3 + A^2*a*c*d^2*g*i^3*x
^3 + A*B*b*c^3*g*i^3*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 3*A*B*a*c
^2*d*g*i^3*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/2*A^2*b*c^3*g*i^3
*x^2 + 3/2*A^2*a*c^2*d*g*i^3*x^2 + 1/30*A*B*b*d^3*g*i^3*n*(12*a^5*log(b*x +
 a)/b^5 - 12*c^5*log(d*x + c)/d^5 - (3*(b^4*c*d^3 - a*b^3*d^4)*x^4 - 4*(b^4
*c^2*d^2 - a^2*b^2*d^4)*x^3 + 6*(b^4*c^3*d - a^3*b*d^4)*x^2 - 12*(b^4*c^4 -
 a^4*d^4)*x)/(b^4*d^4)) - 1/4*A*B*b*c*d^2*g*i^3*n*(6*a^4*log(b*x + a)/b^4 -
 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a
^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) - 1/12*A*B*a*d^3*g*i^3*
n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*
d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^
3)) + A*B*b*c^2*d*g*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3
- ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) + A*B*a*c*
d^2*g*i^3*n*(2*a^3*log(b*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d -
a*b*d^2)*x^2 - 2*(b^2*c^2 - a^2*d^2)*x)/(b^2*d^2)) - A*B*b*c^3*g*i^3*n*(a^2
*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) - 3*A*B*a*c
^2*d*g*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*log(d*x + c)/d^2 + (b*c - a*d)*x/(
b*d)) + 2*A*B*a*c^3*g*i^3*n*(a*log(b*x + a)/b - c*log(d*x + c)/d) + 2*A*B*a
*c^3*g*i^3*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*a*c^3*g*i^3*x - 1
/60*(47*a^2*b^2*c^3*d^2*g*i^3*n^2 - 27*a^3*b*c^2*d^3*g*i^3*n^2 + 6*a^4*c*d^
4*g*i^3*n^2 + (5*g*i^3*n^2 - 6*g*i^3*n*log(e))*b^4*c^5 - (31*g*i^3*n^2 - 30
*g*i^3*n*log(e))*a*b^3*c^4*d)*B^2*log(d*x + c)/(b^3*d^2) + 1/10*(b^5*c^5*g*
i^3*n^2 - 5*a*b^4*c^4*d*g*i^3*n^2 + 10*a^2*b^3*c^3*d^2*g*i^3*n^2 - 10*a^3*b
^2*c^2*d^3*g*i^3*n^2 + 5*a^4*b*c*d^4*g*i^3*n^2 - a^5*d^5*g*i^3*n^2)*(log(b*
x + a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d
)))*B^2/(b^4*d^2) + 1/60*(12*B^2*b^5*d^5*g*i^3*x^5*log(e)^2 - 3*((2*g*i^3*n
*log(e) - 15*g*i^3*log(e)^2)*b^5*c*d^4 - (2*g*i^3*n*log(e) + 5*g*i^3*log(e)
^2)*a*b^4*d^5)*B^2*x^4 + 2*((g*i^3*n^2 - 11*g*i^3*n*log(e) + 30*g*i^3*log(e
)^2)*b^5*c^2*d^3 - 2*(g*i^3*n^2 - 5*g*i^3*n*log(e) - 15*g*i^3*log(e)^2)*a*b
^4*c*d^4 + (g*i^3*n^2 + g*i^3*n*log(e))*a^2*b^3*d^5)*B^2*x^3 + ((8*g*i^3*n^
2 - 27*g*i^3*n*log(e) + 30*g*i^3*log(e)^2)*b^5*c^3*d^2 - 3*(6*g*i^3*n^2 - 5
*g*i^3*n*log(e) - 30*g*i^3*log(e)^2)*a*b^4*c^2*d^3 + 3*(4*g*i^3*n^2 + 5*g*i
^3*n*log(e))*a^2*b^3*c*d^4 - (2*g*i^3*n^2 + 3*g*i^3*n*log(e))*a^3*b^2*d^5)*
B^2*x^2 - 3*(10*a^2*b^3*c^3*d^2*g*i^3*n^2 - 10*a^3*b^2*c^2*d^3*g*i^3*n^2 +
5*a^4*b*c*d^4*g*i^3*n^2 - a^5*d^5*g*i^3*n^2)*B^2*log(b*x + a)^2 - 6*(b^5*c^
5*g*i^3*n^2 - 5*a*b^4*c^4*d*g*i^3*n^2)*B^2*log(b*x + a)*log(d*x + c) + 3*(b
^5*c^5*g*i^3*n^2 - 5*a*b^4*c^4*d*g*i^3*n^2)*B^2*log(d*x + c)^2 + ((11*g*i^3
*n^2 - 6*g*i^3*n*log(e))*b^5*c^4*d - 2*(14*g*i^3*n^2 + 15*g*i^3*n*log(e) -
30*g*i^3*log(e)^2)*a*b^4*c^3*d^2 + 12*(2*g*i^3*n^2 + 5*g*i^3*n*log(e))*a^2*
b^3*c^2*d^3 - 2*(4*g*i^3*n^2 + 15*g*i^3*n*log(e))*a^3*b^2*c*d^4 + (g*i^3*n^
2 + 6*g*i^3*n*log(e))*a^4*b*d^5)*B^2*x - (6*a*b^4*c^4*d*g*i^3*n^2 + 3*(g*i^
3*n^2 - 20*g*i^3*n*log(e))*a^2*b^3*c^3*d^2 - (23*g*i^3*n^2 - 60*g*i^3*n*log
(e))*a^3*b^2*c^2*d^3 + (19*g*i^3*n^2 - 30*g*i^3*n*log(e))*a^4*b*c*d^4 - (5*
g*i^3*n^2 - 6*g*i^3*n*log(e))*a^5*d^5)*B^2*log(b*x + a) + 3*(4*B^2*b^5*d^5*
g*i^3*x^5 + 20*B^2*a*b^4*c^3*d^2*g*i^3*x + 5*(3*b^5*c*d^4*g*i^3 + a*b^4*d^5
```

```
*g*i^3)*B^2*x^4 + 20*(b^5*c^2*d^3*g*i^3 + a*b^4*c*d^4*g*i^3)*B^2*x^3 + 10*(
b^5*c^3*d^2*g*i^3 + 3*a*b^4*c^2*d^3*g*i^3)*B^2*x^2)*log((b*x + a)^n)^2 + 3*
(4*B^2*b^5*d^5*g*i^3*x^5 + 20*B^2*a*b^4*c^3*d^2*g*i^3*x + 5*(3*b^5*c*d^4*g*
i^3 + a*b^4*d^5*g*i^3)*B^2*x^4 + 20*(b^5*c^2*d^3*g*i^3 + a*b^4*c*d^4*g*i^3)
*B^2*x^3 + 10*(b^5*c^3*d^2*g*i^3 + 3*a*b^4*c^2*d^3*g*i^3)*B^2*x^2)*log((d*x
 + c)^n)^2 + (24*B^2*b^5*d^5*g*i^3*x^5*log(e) - 6*((g*i^3*n - 15*g*i^3*log(
e))*b^5*c*d^4 - (g*i^3*n + 5*g*i^3*log(e))*a*b^4*d^5)*B^2*x^4 + 2*(a^2*b^3*
d^5*g*i^3*n - (11*g*i^3*n - 60*g*i^3*log(e))*b^5*c^2*d^3 + 10*(g*i^3*n + 6*
g*i^3*log(e))*a*b^4*c*d^4)*B^2*x^3 + 3*(5*a^2*b^3*c*d^4*g*i^3*n - a^3*b^2*d
^5*g*i^3*n - (9*g*i^3*n - 20*g*i^3*log(e))*b^5*c^3*d^2 + 5*(g*i^3*n + 12*g*
i^3*log(e))*a*b^4*c^2*d^3)*B^2*x^2 - 6*(b^5*c^4*d*g*i^3*n - 10*a^2*b^3*c^2*
d^3*g*i^3*n + 5*a^3*b^2*c*d^4*g*i^3*n - a^4*b*d^5*g*i^3*n + 5*(g*i^3*n - 4*
g*i^3*log(e))*a*b^4*c^3*d^2)*B^2*x + 6*(10*a^2*b^3*c^3*d^2*g*i^3*n - 10*a^3
*b^2*c^2*d^3*g*i^3*n + 5*a^4*b*c*d^4*g*i^3*n - a^5*d^5*g*i^3*n)*B^2*log(b*x
 + a) + 6*(b^5*c^5*g*i^3*n - 5*a*b^4*c^4*d*g*i^3*n)*B^2*log(d*x + c))*log((
b*x + a)^n) - (24*B^2*b^5*d^5*g*i^3*x^5*log(e) - 6*((g*i^3*n - 15*g*i^3*log
(e))*b^5*c*d^4 - (g*i^3*n + 5*g*i^3*log(e))*a*b^4*d^5)*B^2*x^4 + 2*(a^2*b^3
*d^5*g*i^3*n - (11*g*i^3*n - 60*g*i^3*log(e))*b^5*c^2*d^3 + 10*(g*i^3*n + 6
*g*i^3*log(e))*a*b^4*c*d^4)*B^2*x^3 + 3*(5*a^2*b^3*c*d^4*g*i^3*n - a^3*b^2*
d^5*g*i^3*n - (9*g*i^3*n - 20*g*i^3*log(e))*b^5*c^3*d^2 + 5*(g*i^3*n + 12*g
*i^3*log(e))*a*b^4*c^2*d^3)*B^2*x^2 - 6*(b^5*c^4*d*g*i^3*n - 10*a^2*b^3*c^2
*d^3*g*i^3*n + 5*a^3*b^2*c*d^4*g*i^3*n - a^4*b*d^5*g*i^3*n + 5*(g*i^3*n - 4
*g*i^3*log(e))*a*b^4*c^3*d^2)*B^2*x + 6*(10*a^2*b^3*c^3*d^2*g*i^3*n - 10*a^
3*b^2*c^2*d^3*g*i^3*n + 5*a^4*b*c*d^4*g*i^3*n - a^5*d^5*g*i^3*n)*B^2*log(b*
x + a) + 6*(b^5*c^5*g*i^3*n - 5*a*b^4*c^4*d*g*i^3*n)*B^2*log(d*x + c) + 6*(
4*B^2*b^5*d^5*g*i^3*x^5 + 20*B^2*a*b^4*c^3*d^2*g*i^3*x + 5*(3*b^5*c*d^4*g*i
^3 + a*b^4*d^5*g*i^3)*B^2*x^4 + 20*(b^5*c^2*d^3*g*i^3 + a*b^4*c*d^4*g*i^3)*
B^2*x^3 + 10*(b^5*c^3*d^2*g*i^3 + 3*a*b^4*c^2*d^3*g*i^3)*B^2*x^2)*log((b*x
+ a)^n))*log((d*x + c)^n))/(b^4*d^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a\,g+b\,g\,x\right)\,{\left(c\,i+d\,i\,x\right)}^3\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,
x)
```

```
[Out] int((a*g + b*g*x)*(c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)
```

```
[Out] Timed out
```

3.181 $\int (ci+dix)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=454

$$\frac{Bi^3n(bc-ad)^4\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^4d}-\frac{Bi^3n(a+bx)(bc-ad)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^4}-\frac{Bi^3}{}$$

```
[Out] 5/12*B^2*(-a*d+b*c)^3*i^3*n^2*x/b^3+1/12*B^2*(-a*d+b*c)^2*i^3*n^2*(d*x+c)^2
/b^2/d-1/2*B*(-a*d+b*c)^3*i^3*n*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^4
-1/4*B*(-a*d+b*c)^2*i^3*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/d-1
/6*B*(-a*d+b*c)*i^3*n*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b/d+1/4*i^3
*(d*x+c)^4*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d+5/12*B^2*(-a*d+b*c)^4*i^3*n^
2*ln((b*x+a)/(d*x+c))/b^4/d+11/12*B^2*(-a*d+b*c)^4*i^3*n^2*ln(d*x+c)/b^4/d+
1/2*B*(-a*d+b*c)^4*i^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(
b*x+a))/b^4/d-1/2*B^2*(-a*d+b*c)^4*i^3*n^2*polylog(2,b*(d*x+c)/d/(b*x+a))/b
^4/d
```

Rubi [A] time = 0.66, antiderivative size = 544, normalized size of antiderivative = 1.20, number of steps used = 23, number of rules used = 13, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.371, Rules used = {2525, 12, 2528, 2486, 31, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 43}

$$-\frac{B^2i^3n^2(bc-ad)^4\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{2b^4d}-\frac{Bi^3n(bc-ad)^4\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2b^4d}-\frac{Bi^3n(c+dx)^2(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]
```

```
[Out] -(A*B*(b*c - a*d)^3*i^3*n*x)/(2*b^3) + (5*B^2*(b*c - a*d)^3*i^3*n^2*x)/(12*
b^3) + (B^2*(b*c - a*d)^2*i^3*n^2*(c + d*x)^2)/(12*b^2*d) + (5*B^2*(b*c - a
*d)^4*i^3*n^2*Log[a + b*x])/(12*b^4*d) + (B^2*(b*c - a*d)^4*i^3*n^2*Log[a +
 b*x]^2)/(4*b^4*d) - (B^2*(b*c - a*d)^3*i^3*n*(a + b*x)*Log[e*((a + b*x)/(c
 + d*x))^n])/(2*b^4) - (B*(b*c - a*d)^2*i^3*n*(c + d*x)^2*(A + B*Log[e*((a
+ b*x)/(c + d*x))^n]))/(4*b^2*d) - (B*(b*c - a*d)*i^3*n*(c + d*x)^3*(A + B*
Log[e*((a + b*x)/(c + d*x))^n]))/(6*b*d) - (B*(b*c - a*d)^4*i^3*n*Log[a + b
*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^4*d) + (i^3*(c + d*x)^4*(A
 + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(4*d) + (B^2*(b*c - a*d)^4*i^3*n^2*
Log[c + d*x])/(2*b^4*d) - (B^2*(b*c - a*d)^4*i^3*n^2*Log[a + b*x]*Log[(b*(c
 + d*x))/(b*c - a*d)])/(2*b^4*d) - (B^2*(b*c - a*d)^4*i^3*n^2*PolyLog[2, -(
(d*(a + b*x))/(b*c - a*d))])/(2*b^4*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
```

```
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
```

```
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int (181c+181dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\,dx=\frac{5929741(c+dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{4d}-(Bn)\int \frac{1073\cdots}{\cdots}$$

$$=\frac{5929741(c+dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{4d}-\frac{(5929741B\cdots}{\cdots}$$

$$=\frac{5929741(c+dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{4d}-\frac{(5929741B\cdots}{\cdots}$$

$$=\frac{5929741(c+dx)^4\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{4d}-\frac{(5929741B\cdots}{\cdots}$$

$$=-\frac{5929741AB(bc-ad)^3nx}{2b^3}-\frac{5929741B(bc-ad)^2n(c+d\cdots}{4b^2\cdots}$$

$$=-\frac{5929741AB(bc-ad)^3nx}{2b^3}-\frac{5929741B^2(bc-ad)^3n(a+b\cdots}{2b^4}$$

$$=-\frac{5929741AB(bc-ad)^3nx}{2b^3}-\frac{5929741B^2(bc-ad)^3n(a+b\cdots}{2b^4}$$

$$=-\frac{5929741AB(bc-ad)^3nx}{2b^3}+\frac{29648705B^2(bc-ad)^3n^2x}{12b^3}-\cdots$$

$$=-\frac{5929741AB(bc-ad)^3nx}{2b^3}+\frac{29648705B^2(bc-ad)^3n^2x}{12b^3}-\cdots$$

$$=-\frac{5929741AB(bc-ad)^3nx}{2b^3}+\frac{29648705B^2(bc-ad)^3n^2x}{12b^3}-\cdots$$

Mathematica [A] time = 0.32, size = 409, normalized size = 0.90

$$i^3\left((c+dx)^4\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2-\frac{Bn(bc-ad)\left(2b^3(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+3b^2(c+dx)^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+6(b\cdots\right)}{\cdots}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2,x]
```

```
[Out] (i^3*((c + d*x)^4*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - (B*(b*c - a*d)
*n*(6*A*b*d*(b*c - a*d)^2*x - 3*B*(b*c - a*d)^2*n*(b*d*x + (b*c - a*d)*Log[
a + b*x]) - B*(b*c - a*d)*n*(2*b*d*(b*c - a*d)*x + b^2*(c + d*x)^2 + 2*(b*c
 - a*d)^2*Log[a + b*x]) + 6*B*d*(b*c - a*d)^2*(a + b*x)*Log[e*((a + b*x)/(c
 + d*x))^n] + 3*b^2*(b*c - a*d)*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]) + 2*b^3*(c + d*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 6*(b*c
 - a*d)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 6*B*(b*c -
a*d)^3*n*Log[c + d*x] - 3*B*(b*c - a*d)^3*n*(Log[a + b*x]*(Log[a + b*x] - 2
*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d
)]))))/(3*b^4)))/(4*d)
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(A^2d^3i^3x^3 + 3\,A^2cd^2i^3x^2 + 3\,A^2c^2di^3x + A^2c^3i^3 + \left(B^2d^3i^3x^3 + 3\,B^2cd^2i^3x^2 + 3\,B^2c^2di^3x + B^2c^3i^3\right)\log\left(e\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="fr
icas")
```

```
[Out] integral(A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c^
3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c^
3*i^3)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2*
i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n),
x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="gi
ac")
```

```
[Out] Timed out
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \left(dix + ci\right)^{3} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right) + A\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [B] time = 4.98, size = 2129, normalized size = 4.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2,x, algorithm="ma
xima")
```

```
[Out] 1/2*A*B*d^3*i^3*x^4*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/4*A^2*d^3*i^
3*x^4 + 2*A*B*c*d^2*i^3*x^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + A^2*c*
d^2*i^3*x^3 + 3*A*B*c^2*d*i^3*x^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) +
3/2*A^2*c^2*d*i^3*x^2 - 1/12*A*B*d^3*i^3*n*(6*a^4*log(b*x + a)/b^4 - 6*c^4*
log(d*x + c)/d^4 + (2*(b^3*c*d^2 - a*b^2*d^3)*x^3 - 3*(b^3*c^2*d - a^2*b*d^
3)*x^2 + 6*(b^3*c^3 - a^3*d^3)*x)/(b^3*d^3)) + A*B*c*d^2*i^3*n*(2*a^3*log(b
*x + a)/b^3 - 2*c^3*log(d*x + c)/d^3 - ((b^2*c*d - a*b*d^2)*x^2 - 2*(b^2*c^
2 - a^2*d^2)*x)/(b^2*d^2)) - 3*A*B*c^2*d*i^3*n*(a^2*log(b*x + a)/b^2 - c^2*
log(d*x + c)/d^2 + (b*c - a*d)*x/(b*d)) + 2*A*B*c^3*i^3*n*(a*log(b*x + a)/b
 - c*log(d*x + c)/d) + 2*A*B*c^3*i^3*x*log(e*(b*x/(d*x + c) + a/(d*x + c))^
n) + A^2*c^3*i^3*x - 1/12*(26*a*b^2*c^3*d*i^3*n^2 - 21*a^2*b*c^2*d^2*i^3*n^
2 + 6*a^3*c*d^3*i^3*n^2 - (11*i^3*n^2 - 6*i^3*n*log(e))*b^3*c^4)*B^2*log(d*
x + c)/(b^3*d) - 1/2*(b^4*c^4*i^3*n^2 - 4*a*b^3*c^3*d*i^3*n^2 + 6*a^2*b^2*c
^2*d^2*i^3*n^2 - 4*a^3*b*c*d^3*i^3*n^2 + a^4*d^4*i^3*n^2)*(log(b*x + a)*log
((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))*B^2/(b
^4*d) + 1/12*(3*B^2*b^4*d^4*i^3*x^4*log(e)^2 + 6*B^2*b^4*c^4*i^3*n^2*log(b*
x + a)*log(d*x + c) - 3*B^2*b^4*c^4*i^3*n^2*log(d*x + c)^2 + 2*(a*b^3*d^4*i
^3*n*log(e) - (i^3*n*log(e) - 6*i^3*log(e)^2)*b^4*c*d^3)*B^2*x^3 + ((i^3*n^
2 - 9*i^3*n*log(e) + 18*i^3*log(e)^2)*b^4*c^2*d^2 - 2*(i^3*n^2 - 6*i^3*n*lo
g(e))*a*b^3*c*d^3 + (i^3*n^2 - 3*i^3*n*log(e))*a^2*b^2*d^4)*B^2*x^2 - 3*(4*
a*b^3*c^3*d*i^3*n^2 - 6*a^2*b^2*c^2*d^2*i^3*n^2 + 4*a^3*b*c*d^3*i^3*n^2 - a
^4*d^4*i^3*n^2)*B^2*log(b*x + a)^2 + ((7*i^3*n^2 - 18*i^3*n*log(e) + 12*i^3
*log(e)^2)*b^4*c^3*d - (19*i^3*n^2 - 36*i^3*n*log(e))*a*b^3*c^2*d^2 + (17*i
^3*n^2 - 24*i^3*n*log(e))*a^2*b^2*c*d^3 - (5*i^3*n^2 - 6*i^3*n*log(e))*a^3*
b*d^4)*B^2*x - (6*(3*i^3*n^2 - 4*i^3*n*log(e))*a*b^3*c^3*d - 9*(5*i^3*n^2 -
 4*i^3*n*log(e))*a^2*b^2*c^2*d^2 + 2*(19*i^3*n^2 - 12*i^3*n*log(e))*a^3*b*c
*d^3 - (11*i^3*n^2 - 6*i^3*n*log(e))*a^4*d^4)*B^2*log(b*x + a) + 3*(B^2*b^4
*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*
b^4*c^3*d*i^3*x)*log((b*x + a)^n)^2 + 3*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*
d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x)*log((d*x +
 c)^n)^2 + (6*B^2*b^4*d^4*i^3*x^4*log(e) - 6*B^2*b^4*c^4*i^3*n*log(d*x + c)
 + 2*(a*b^3*d^4*i^3*n - (i^3*n - 12*i^3*log(e))*b^4*c*d^3)*B^2*x^3 + 3*(4*a
*b^3*c*d^3*i^3*n - a^2*b^2*d^4*i^3*n - 3*(i^3*n - 4*i^3*log(e))*b^4*c^2*d^2
)*B^2*x^2 + 6*(6*a*b^3*c^2*d^2*i^3*n - 4*a^2*b^2*c*d^3*i^3*n + a^3*b*d^4*i^
3*n - (3*i^3*n - 4*i^3*log(e))*b^4*c^3*d)*B^2*x + 6*(4*a*b^3*c^3*d*i^3*n -
6*a^2*b^2*c^2*d^2*i^3*n + 4*a^3*b*c*d^3*i^3*n - a^4*d^4*i^3*n)*B^2*log(b*x
+ a))*log((b*x + a)^n) - (6*B^2*b^4*d^4*i^3*x^4*log(e) - 6*B^2*b^4*c^4*i^3*
n*log(d*x + c) + 2*(a*b^3*d^4*i^3*n - (i^3*n - 12*i^3*log(e))*b^4*c*d^3)*B^
2*x^3 + 3*(4*a*b^3*c*d^3*i^3*n - a^2*b^2*d^4*i^3*n - 3*(i^3*n - 4*i^3*log(e
))*b^4*c^2*d^2)*B^2*x^2 + 6*(6*a*b^3*c^2*d^2*i^3*n - 4*a^2*b^2*c*d^3*i^3*n
+ a^3*b*d^4*i^3*n - (3*i^3*n - 4*i^3*log(e))*b^4*c^3*d)*B^2*x + 6*(4*a*b^3*
c^3*d*i^3*n - 6*a^2*b^2*c^2*d^2*i^3*n + 4*a^3*b*c*d^3*i^3*n - a^4*d^4*i^3*n
)*B^2*log(b*x + a) + 6*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B
^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x)*log((b*x + a)^n))*log((d*x
+ c)^n))/(b^4*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (c\,i + d\,i\,x)^3 \left(A + B\,\ln\left(e\left(\frac{a + b\,x}{c + d\,x}\right)^n\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2,x)
```

```
[Out] int((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2,x)
```

```
[Out] Timed out
```

3.182 $\int \frac{(ci+dix)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ag+bgx}\,dx$

Optimal. Leaf size=762

$$\frac{2Bi^3n(bc-ad)^3\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g}+\frac{di^3(a+bx)(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{b^4g}-\frac{5Bdi^3n}{}$$

```
[Out] 1/3*B^2*d*(-a*d+b*c)^2*i^3*n^2*x/b^3/g-5/3*B*d*(-a*d+b*c)^2*i^3*n*(b*x+a)*(
A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^4/g-1/3*B*(-a*d+b*c)*i^3*n*(d*x+c)^2*(A+B*
ln(e*((b*x+a)/(d*x+c))^n))/b^2/g+d*(-a*d+b*c)^2*i^3*(b*x+a)*(A+B*ln(e*((b*x
+a)/(d*x+c))^n))^2/b^4/g+1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d
*x+c))^n))^2/b^2/g+1/3*i^3*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b/g+
2*B*(-a*d+b*c)^3*i^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x
+c))/b^4/g+1/3*B^2*(-a*d+b*c)^3*i^3*n^2*ln((b*x+a)/(d*x+c))/b^4/g+2*B^2*(-a
*d+b*c)^3*i^3*n^2*ln(d*x+c)/b^4/g+5/3*B*(-a*d+b*c)^3*i^3*n*(A+B*ln(e*((b*x+
a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g-(-a*d+b*c)^3*i^3*(A+B*ln(e*
((b*x+a)/(d*x+c))^n))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g+2*B^2*(-a*d+b*c)^3*
i^3*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/g-5/3*B^2*(-a*d+b*c)^3*i^3*n^2*p
olylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g+2*B*(-a*d+b*c)^3*i^3*n*(A+B*ln(e*((b*x+
a)/(d*x+c))^n))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g+2*B^2*(-a*d+b*c)^3*i^3
*n^2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^4/g
```

Rubi [B] time = 5.62, antiderivative size = 1995, normalized size of antiderivative = 2.62, number of steps used = 101, number of rules used = 28, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.622, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2440, 2434, 2433, 2375, 2317, 2374, 6589, 2499, 2302, 30, 2396, 2525, 2486, 31, 43}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x
),x]
```

```
[Out] (-5*A*B*d*(b*c - a*d)^2*i^3*n*x)/(3*b^3*g) + (B^2*d*(b*c - a*d)^2*i^3*n^2*x
)/(3*b^3*g) + (B^2*(b*c - a*d)^3*i^3*n^2*Log[a + b*x])/(3*b^4*g) - (a*B^2*d
*(b*c - a*d)^2*i^3*n^2*Log[a + b*x]^2)/(b^4*g) + (5*B^2*(b*c - a*d)^3*i^3*n
^2*Log[a + b*x]^2)/(6*b^4*g) - (A*B*(b*c - a*d)^3*i^3*n*Log[g*(a + b*x)]^2)
/(b^4*g) + (B^2*(b*c - a*d)^3*i^3*n^2*Log[g*(a + b*x)]^3)/(3*b^4*g) - (B^2*
(b*c - a*d)^3*i^3*n^2*Log[g*(a + b*x)]^2*Log[-c - d*x])/(b^4*g) + (2*B^2*(b
*c - a*d)^3*i^3*n*Log[g*(a + b*x)]*Log[(a + b*x)^n]*Log[-c - d*x])/(b^4*g)
- (B^2*(b*c - a*d)^3*i^3*Log[(a + b*x)^n]^2*Log[-c - d*x])/(b^4*g) - (5*B^2
*d*(b*c - a*d)^2*i^3*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(3*b^4*g)
- (B*(b*c - a*d)*i^3*n*(c + d*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/
(3*b^2*g) + (2*a*B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*
x)/(c + d*x))^n]))/(b^4*g) - (5*B*(b*c - a*d)^3*i^3*n*Log[a + b*x]*(A + B*L
og[e*((a + b*x)/(c + d*x))^n]))/(3*b^4*g) + (d*(b*c - a*d)^2*i^3*x*(A + B*L
og[e*((a + b*x)/(c + d*x))^n])^2)/(b^3*g) + ((b*c - a*d)*i^3*(c + d*x)^2*(A
 + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*b^2*g) + (i^3*(c + d*x)^3*(A + B
*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*b*g) + (5*B^2*(b*c - a*d)^3*i^3*n^2*
Log[c + d*x])/(3*b^4*g) + (2*B^2*c*(b*c - a*d)^2*i^3*n^2*Log[-((d*(a + b*x)
)/(b*c - a*d))]*Log[c + d*x])/(b^3*g) - (2*B*c*(b*c - a*d)^2*i^3*n*(A + B*L
og[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(b^3*g) - (B^2*c*(b*c - a*d)^2
*i^3*n^2*Log[c + d*x]^2)/(b^3*g) + (2*a*B^2*d*(b*c - a*d)^2*i^3*n^2*Log[a +
 b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g) - (5*B^2*(b*c - a*d)^3*i^3*n^
2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(3*b^4*g) + (B^2*(b*c - a*d)
```

```
^3*i^3*n^2*Log[g*(a + b*x)]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g) + (B^
2*(b*c - a*d)^3*i^3*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4
*g) + (B^2*(b*c - a*d)^3*i^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x
)^(-n)]^2)/(b^4*g) - (B^2*(b*c - a*d)^3*i^3*Log[g*(a + b*x)]*Log[(c + d*x)^
(-n)]^2)/(b^4*g) + ((b*c - a*d)^3*i^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
)^2*Log[a*g + b*g*x])/(b^4*g) + (2*A*B*(b*c - a*d)^3*i^3*n*Log[(b*(c + d*x)
)/(b*c - a*d)]*Log[a*g + b*g*x])/(b^4*g) - (2*B^2*(b*c - a*d)^3*i^3*n*Log[(
b*(c + d*x))/(b*c - a*d)]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n
] + Log[(c + d*x)^(-n)])*Log[a*g + b*g*x])/(b^4*g) - (B^2*(b*c - a*d)^3*i^3
*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[a*g + b*g*x]^2)/(b^4*g) - (B^2*(b*c -
 a*d)^3*i^3*n^2*Log[(b*(c + d*x))/(b*c - a*d)]*Log[a*g + b*g*x]^2)/(b^4*g)
+ (2*A*B*(b*c - a*d)^3*i^3*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4
*g) + (2*a*B^2*d*(b*c - a*d)^2*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*
d))])/(b^4*g) - (5*B^2*(b*c - a*d)^3*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*
c - a*d))])/(3*b^4*g) + (2*B^2*(b*c - a*d)^3*i^3*n*Log[(a + b*x)^n]*PolyLog
[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g) - (2*B^2*(b*c - a*d)^3*i^3*n*(Lo
g[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*Poly
Log[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g) + (2*B^2*c*(b*c - a*d)^2*i^3*
n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^3*g) - (2*B^2*(b*c - a*d)^3*i
^3*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^4*g) - (
2*B^2*(b*c - a*d)^3*i^3*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/(b^4*
g) - (2*B^2*(b*c - a*d)^3*i^3*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/(b
^4*g)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
```

```
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
```

```
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(182c+182dx)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ag+bgx}\,dx = \int \left(\frac{6028568d(bc-ad)^2 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g} + \frac{33124d(b\right.$$

$$= \frac{\left(6028568(bc-ad)^3\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ag+bgx}\,dx}{b^3} + \frac{(182d)\int(182c}{}$$

$$= \frac{6028568d(bc-ad)^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g} + \frac{3014284(bc}{}$$

$$= \frac{6028568d(bc-ad)^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g} + \frac{3014284(bc}{}$$

$$= \frac{6028568d(bc-ad)^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g} + \frac{3014284(bc}{}$$

$$= \frac{6028568d(bc-ad)^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g} + \frac{3014284(bc}{}$$

$$= -\frac{30142840ABd(bc-ad)^2nx}{3b^3g} - \frac{6028568B(bc-ad)n(c+dx)^2}{3b^2g}$$

$$= -\frac{30142840ABd(bc-ad)^2nx}{3b^3g} - \frac{30142840B^2d(bc-ad)^2n(a+b}{3b^4g}$$

$$= -\frac{30142840ABd(bc-ad)^2nx}{3b^3g} - \frac{30142840B^2d(bc-ad)^2n(a+b}{3b^4g}$$

$$= -\frac{30142840ABd(bc-ad)^2nx}{3b^3g} + \frac{6028568B^2d(bc-ad)^2n^2x}{3b^3g} + \frac{6}{}$$

$$= -\frac{30142840ABd(bc-ad)^2nx}{3b^3g} + \frac{6028568B^2d(bc-ad)^2n^2x}{3b^3g} + \frac{6}{}$$

$$= -\frac{30142840ABd(bc-ad)^2nx}{3b^3g} + \frac{6028568B^2d(bc-ad)^2n^2x}{3b^3g} + \frac{6}{}$$

$$= -\frac{30142840ABd(bc-ad)^2nx}{3b^3g} + \frac{6028568B^2d(bc-ad)^2n^2x}{3b^3g} + \frac{6}{}$$

$$= -\frac{30142840ABd(bc-ad)^2nx}{3b^3g} + \frac{6028568B^2d(bc-ad)^2n^2x}{3b^3g} + \frac{6}{}$$

Mathematica [B] time = 5.20, size = 2941, normalized size = 3.86

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g +
 b*g*x),x]
```

```
[Out] (i^3*(6*b*d*(3*b^2*c^2 - 3*a*b*c*d + a^2*d^2)*x*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 + 3*b^2*d^2*(3*b*c - a*d)*x^2*
(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 + 2
*b^3*d^3*x^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c +
 d*x)])^2 + 6*(b*c - a*d)^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))
^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 - 18*b^2*B*c^2*n*(A + B*Log[e*((a + b
*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(a*d*Log[a/b + x]^2 - 2*a
*d*Log[a/b + x]*(1 + Log[a + b*x]) + 2*(-(b*c) + a*d + Log[c/d + x]*(b*c +
a*d*Log[a + b*x] - a*d*Log[(d*(a + b*x))/(-(b*c) + a*d)]) + (-(b*d*x) + a*d
*Log[a + b*x])*Log[(a + b*x)/(c + d*x)]) - 2*a*d*PolyLog[2, (b*(c + d*x))/(
b*c - a*d)]) - 2*B*n*(-A - B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(a +
b*x)/(c + d*x)])*(6*a^2*b*c*d^2 - 6*a^3*d^3 + 2*b^3*c^2*d*x + 3*a*b^2*c*d^2
*x - 5*a^2*b*d^3*x - b^3*c*d^2*x^2 + a*b^2*d^3*x^2 - 3*a^3*d^3*Log[a/b + x]
^2 - 6*a^2*b*c*d^2*Log[c/d + x] + 5*a^3*d^3*Log[a + b*x] - 6*a^3*d^3*Log[c/
d + x]*Log[a + b*x] + 6*a^3*d^3*Log[a/b + x]*(1 + Log[a + b*x]) + 6*a^3*d^3
*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 6*a^2*b*d^3*x*Log[(a + b*
x)/(c + d*x)] - 3*a*b^2*d^3*x^2*Log[(a + b*x)/(c + d*x)] + 2*b^3*d^3*x^3*Lo
g[(a + b*x)/(c + d*x)] - 6*a^3*d^3*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] -
2*b^3*c^3*Log[c + d*x] - 3*a*b^2*c^2*d*Log[c + d*x] + 6*a^3*d^3*PolyLog[2,
(b*(c + d*x))/(b*c - a*d)]) + 6*b^3*B*c^3*n*(A + B*Log[e*((a + b*x)/(c + d*
x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(Log[a/b + x]^2 - 2*Log[a + b*x]*(Lo
g[a/b + x] - Log[c/d + x] - Log[(a + b*x)/(c + d*x)]) - 2*(Log[c/d + x]*Log
[(d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) +
9*b*B*c*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*
x)])*(-4*a*d^2*(a + b*x)*(-1 + Log[a/b + x]) + 2*a^2*d^2*Log[a/b + x]^2 + 4
*a*b*d*(c + d*x)*(-1 + Log[c/d + x]) + d^2*(b*x*(2*a - b*x) + 2*b^2*x^2*Log
[a/b + x] - 2*a^2*Log[a + b*x]) - 2*d^2*(b*x*(-2*a + b*x) + 2*a^2*Log[a + b
*x])*(Log[a/b + x] - Log[c/d + x] - Log[(a + b*x)/(c + d*x)]) + b^2*(d*x*(-
2*c + d*x) - 2*d^2*x^2*Log[c/d + x] + 2*c^2*Log[c + d*x]) - 4*a^2*d^2*(Log[
c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[2, (b*(c + d*x))/(b*c
- a*d)])) + 6*b^2*B^2*c^2*n^2*(Log[(a + b*x)/(c + d*x)]*(-(a*d*Log[(a + b*x
)/(c + d*x)]^2) + 6*(b*c - a*d)*Log[(b*c - a*d)/(b*c + b*d*x)] + 3*d*Log[(a
 + b*x)/(c + d*x)]*(a + b*x + a*Log[(b*c - a*d)/(b*c + b*d*x)])) + 6*(b*c -
 a*d + a*d*Log[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))
] - 6*a*d*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))]) - 3*b*B^2*c*n^2*(6*b^2*c
^2*Log[(b*c - a*d)/(c + d*x)] - 12*a*b*c*d*Log[(b*c - a*d)/(c + d*x)] + 6*a
^2*d^2*Log[(b*c - a*d)/(c + d*x)] + 6*a*b*c*d*Log[(a + b*x)/(c + d*x)] - 6*
a^2*d^2*Log[(a + b*x)/(c + d*x)] + 6*b^2*c*d*x*Log[(a + b*x)/(c + d*x)] - 6
*a*b*d^2*x*Log[(a + b*x)/(c + d*x)] + 9*a^2*d^2*Log[(a + b*x)/(c + d*x)]^2
+ 6*a*b*d^2*x*Log[(a + b*x)/(c + d*x)]^2 - 3*b^2*d^2*x^2*Log[(a + b*x)/(c +
 d*x)]^2 - 2*a^2*d^2*Log[(a + b*x)/(c + d*x)]^3 + 6*b^2*c^2*Log[(a + b*x)/(
c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 12*a*b*c*d*Log[(a + b*x)/(c + d*
x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 18*a^2*d^2*Log[(a + b*x)/(c + d*x)]*Lo
g[(b*c - a*d)/(b*c + b*d*x)] + 6*a^2*d^2*Log[(a + b*x)/(c + d*x)]^2*Log[(b*
c - a*d)/(b*c + b*d*x)] + 6*(b^2*c^2 + 2*a*b*c*d - 3*a^2*d^2 + 2*a^2*d^2*Lo
g[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 12*a^2*d^
2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))]) + B^2*n^2*(2*b^3*c^3 - 4*a*b^2*c
^2*d + 2*a^2*b*c*d^2 + 2*b^3*c^2*d*x - 4*a*b^2*c*d^2*x + 2*a^2*b*d^3*x + 6*
b^3*c^3*Log[(b*c - a*d)/(c + d*x)] - 18*a^2*b*c*d^2*Log[(b*c - a*d)/(c + d*
x)] + 12*a^3*d^3*Log[(b*c - a*d)/(c + d*x)] + 4*a*b^2*c^2*d*Log[(a + b*x)/(
c + d*x)] + 8*a^2*b*c*d^2*Log[(a + b*x)/(c + d*x)] - 12*a^3*d^3*Log[(a + b*
```

```
x)/(c + d*x)] + 4*b^3*c^2*d*x*Log[(a + b*x)/(c + d*x)] + 6*a*b^2*c*d^2*x*Lo
g[(a + b*x)/(c + d*x)] - 10*a^2*b*d^3*x*Log[(a + b*x)/(c + d*x)] - 2*b^3*c*
d^2*x^2*Log[(a + b*x)/(c + d*x)] + 2*a*b^2*d^3*x^2*Log[(a + b*x)/(c + d*x)]
 + 11*a^3*d^3*Log[(a + b*x)/(c + d*x)]^2 + 6*a^2*b*d^3*x*Log[(a + b*x)/(c +
 d*x)]^2 - 3*a*b^2*d^3*x^2*Log[(a + b*x)/(c + d*x)]^2 + 2*b^3*d^3*x^3*Log[(
a + b*x)/(c + d*x)]^2 - 2*a^3*d^3*Log[(a + b*x)/(c + d*x)]^3 + 4*b^3*c^3*Lo
g[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*a*b^2*c^2*d*Log[(
a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 12*a^2*b*c*d^2*Log[(a
+ b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 22*a^3*d^3*Log[(a + b*x)
/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*a^3*d^3*Log[(a + b*x)/(c + d
*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*(2*b^3*c^3 + 3*a*b^2*c^2*d + 6*a^
2*b*c*d^2 - 11*a^3*d^3 + 6*a^3*d^3*Log[(a + b*x)/(c + d*x)])*PolyLog[2, (d*
(a + b*x))/(b*(c + d*x))] - 12*a^3*d^3*PolyLog[3, (d*(a + b*x))/(b*(c + d*x
))]) - 6*b^3*B^2*c^3*n^2*(Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(
c + d*x)]^2 - 2*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b
*x))] - 2*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))])))/(6*b^4*g)
```

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2d^3i^3x^3 + 3\,A^2cd^2i^3x^2 + 3\,A^2c^2di^3x + A^2c^3i^3 + \left(B^2d^3i^3x^3 + 3\,B^2cd^2i^3x^2 + 3\,B^2c^2di^3x + B^2c^3i^3\right)\log\left(e\right.}{bgx + ag}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, a
lgorithm="fricas")
```

```
[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c
^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c
^3*i^3)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2
*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))
/(b*g*x + a*g), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2}{bgx + ag}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g),x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g),x, a
lgorithm="maxima")
```

```
[Out] 3*A^2*c^2*d*i^3*(x/(b*g) - a*log(b*x + a)/(b^2*g)) - 1/6*A^2*d^3*i^3*(6*a^3
*log(b*x + a)/(b^4*g) - (2*b^2*x^3 - 3*a*b*x^2 + 6*a^2*x)/(b^3*g)) + 3/2*A^
2*c*d^2*i^3*(2*a^2*log(b*x + a)/(b^3*g) + (b*x^2 - 2*a*x)/(b^2*g)) + A^2*c^
3*i^3*log(b*g*x + a*g)/(b*g) + 1/6*(2*B^2*b^3*d^3*i^3*x^3 + 3*(3*b^3*c*d^2*
i^3 - a*b^2*d^3*i^3)*B^2*x^2 + 6*(3*b^3*c^2*d*i^3 - 3*a*b^2*c*d^2*i^3 + a^2
*b*d^3*i^3)*B^2*x + 6*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*d^2*i^3
- a^3*d^3*i^3)*B^2*log(b*x + a))*log((d*x + c)^n)^2/(b^4*g) - integrate(-1/
3*(3*B^2*b^4*c^4*i^3*log(e)^2 + 6*A*B*b^4*c^4*i^3*log(e) + 3*(B^2*b^4*d^4*i
^3*log(e)^2 + 2*A*B*b^4*d^4*i^3*log(e))*x^4 + 12*(B^2*b^4*c*d^3*i^3*log(e)^
2 + 2*A*B*b^4*c*d^3*i^3*log(e))*x^3 + 18*(B^2*b^4*c^2*d^2*i^3*log(e)^2 + 2*
A*B*b^4*c^2*d^2*i^3*log(e))*x^2 + 3*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*
i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i
^3)*log((b*x + a)^n)^2 + 12*(B^2*b^4*c^3*d*i^3*log(e)^2 + 2*A*B*b^4*c^3*d*i
^3*log(e))*x + 6*(B^2*b^4*c^4*i^3*log(e) + A*B*b^4*c^4*i^3 + (B^2*b^4*d^4*i
^3*log(e) + A*B*b^4*d^4*i^3)*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e) + A*B*b^4*c*
d^3*i^3)*x^3 + 6*(B^2*b^4*c^2*d^2*i^3*log(e) + A*B*b^4*c^2*d^2*i^3)*x^2 + 4
*(B^2*b^4*c^3*d*i^3*log(e) + A*B*b^4*c^3*d*i^3)*x)*log((b*x + a)^n) - (6*B^
2*b^4*c^4*i^3*log(e) + 6*A*B*b^4*c^4*i^3 + 2*(3*A*B*b^4*d^4*i^3 + (i^3*n +
3*i^3*log(e))*B^2*b^4*d^4)*x^4 + (24*A*B*b^4*c*d^3*i^3 - (a*b^3*d^4*i^3*n -
 3*(3*i^3*n + 8*i^3*log(e))*b^4*c*d^3)*B^2)*x^3 + 3*(12*A*B*b^4*c^2*d^2*i^3
 - (3*a*b^3*c*d^3*i^3*n - a^2*b^2*d^4*i^3*n - 6*(i^3*n + 2*i^3*log(e))*b^4*
c^2*d^2)*B^2)*x^2 + 6*(4*A*B*b^4*c^3*d*i^3 + (3*a*b^3*c^2*d^2*i^3*n - 3*a^2
*b^2*c*d^3*i^3*n + a^3*b*d^4*i^3*n + 4*b^4*c^3*d*i^3*log(e))*B^2)*x + 6*((b
^4*c^3*d*i^3*n - 3*a*b^3*c^2*d^2*i^3*n + 3*a^2*b^2*c*d^3*i^3*n - a^3*b*d^4*
i^3*n)*B^2*x + (a*b^3*c^3*d*i^3*n - 3*a^2*b^2*c^2*d^2*i^3*n + 3*a^3*b*c*d^3
*i^3*n - a^4*d^4*i^3*n)*B^2)*log(b*x + a) + 6*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*
b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2
*b^4*c^4*i^3)*log((b*x + a)^n))*log((d*x + c)^n))/(b^5*d*g*x^2 + a*b^4*c*g
+ (b^5*c*g + a*b^4*d*g)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)^2}{a\,g+b\,g\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
),x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g),x)
```

```
[Out] Timed out
```

3.183 $\int \frac{(ci+dix)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2}\,dx$

Optimal. Leaf size=739

$$\frac{2d^2i^3(a+bx)(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{b^4g^2}-\frac{Bd^2i^3n(a+bx)(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^2}+\frac{6Bdi^3n(bc-}{}$$

```
[Out] -2*B^2*(-a*d+b*c)^2*i^3*n^2*(d*x+c)/b^3/g^2/(b*x+a)-B*d^2*(-a*d+b*c)*i^3*n*
(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^4/g^2-2*B*(-a*d+b*c)^2*i^3*n*(d*x
+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^3/g^2/(b*x+a)+2*d^2*(-a*d+b*c)*i^3*(b
*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^4/g^2-(-a*d+b*c)^2*i^3*(d*x+c)*(A
+B*ln(e*((b*x+a)/(d*x+c))^n))^2/b^3/g^2/(b*x+a)+1/2*d*i^3*(d*x+c)^2*(A+B*ln
(e*((b*x+a)/(d*x+c))^n))^2/b^2/g^2+4*B*d*(-a*d+b*c)^2*i^3*n*(A+B*ln(e*((b*x
+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/b^4/g^2+B^2*d*(-a*d+b*c)^2*i^3*n^
2*ln(d*x+c)/b^4/g^2+B*d*(-a*d+b*c)^2*i^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*
ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^2-3*d*(-a*d+b*c)^2*i^3*(A+B*ln(e*((b*x+a)/(
d*x+c))^n))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^2+4*B^2*d*(-a*d+b*c)^2*i^3*n^
2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/g^2-B^2*d*(-a*d+b*c)^2*i^3*n^2*polylog
(2,b*(d*x+c)/d/(b*x+a))/b^4/g^2+6*B*d*(-a*d+b*c)^2*i^3*n*(A+B*ln(e*((b*x+a)
/(d*x+c))^n))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^2+6*B^2*d*(-a*d+b*c)^2*i
^3*n^2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^4/g^2
```

Rubi [B] time = 4.74, antiderivative size = 1875, normalized size of antiderivative = 2.54, number of steps used = 83, number of rules used = 23, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.511, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x
)^2,x]
```

```
[Out] -((A*B*d^2*(b*c - a*d)*i^3*n*x)/(b^3*g^2)) - (2*B^2*(b*c - a*d)^3*i^3*n^2)/
(b^4*g^2*(a + b*x)) - (2*B^2*d*(b*c - a*d)^2*i^3*n^2*Log[a + b*x])/(b^4*g^2
) - (3*A*B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]^2)/(b^4*g^2) + (a^2*B^2*d^3*i
^3*n^2*Log[a + b*x]^2)/(2*b^4*g^2) - (a*B^2*d^2*(3*b*c - 2*a*d)*i^3*n^2*Log
[a + b*x]^2)/(b^4*g^2) + (B^2*d*(b*c - a*d)^2*i^3*n^2*Log[a + b*x]^2)/(b^4*
g^2) - (B^2*d^2*(b*c - a*d)*i^3*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])
/(b^4*g^2) - (3*B^2*d*(b*c - a*d)^2*i^3*Log[-((b*c - a*d)/(d*(a + b*x)))]*L
og[e*((a + b*x)/(c + d*x))^n]^2)/(b^4*g^2) - (3*B^2*d*(b*c - a*d)^2*i^3*Log
[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/(b^4*g^2) - (2*B*(b*c - a*d)^3*
i^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^2*(a + b*x)) - (a^2*B*
d^3*i^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^2) +
(2*a*B*d^2*(3*b*c - 2*a*d)*i^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c +
d*x))^n]))/(b^4*g^2) - (2*B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]*(A + B*Log[e
*((a + b*x)/(c + d*x))^n]))/(b^4*g^2) + (d^2*(3*b*c - 2*a*d)*i^3*x*(A + B*L
og[e*((a + b*x)/(c + d*x))^n])^2)/(b^3*g^2) + (d^3*i^3*x^2*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n])^2)/(2*b^2*g^2) - ((b*c - a*d)^3*i^3*(A + B*Log[e*((a
 + b*x)/(c + d*x))^n])^2)/(b^4*g^2*(a + b*x)) + (3*d*(b*c - a*d)^2*i^3*Log[
a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^4*g^2) + (3*B^2*d*(b*
c - a*d)^2*i^3*n^2*Log[c + d*x])/(b^4*g^2) - (B^2*c^2*d*i^3*n^2*Log[-((d*(a
 + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^2*g^2) + (2*B^2*c*d*(3*b*c - 2*a*d)
*i^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^3*g^2) - (2*B^2
*d*(b*c - a*d)^2*i^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b
```

```
^4*g^2) + (B*c^2*d*i^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x
])/(b^2*g^2) - (2*B*c*d*(3*b*c - 2*a*d)*i^3*n*(A + B*Log[e*((a + b*x)/(c +
d*x))^n])*Log[c + d*x])/(b^3*g^2) + (2*B*d*(b*c - a*d)^2*i^3*n*(A + B*Log[e
*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(b^4*g^2) + (B^2*c^2*d*i^3*n^2*Log
[c + d*x]^2)/(2*b^2*g^2) - (B^2*c*d*(3*b*c - 2*a*d)*i^3*n^2*Log[c + d*x]^2)
/(b^3*g^2) + (B^2*d*(b*c - a*d)^2*i^3*n^2*Log[c + d*x]^2)/(b^4*g^2) + (6*A*
B*d*(b*c - a*d)^2*i^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4*g
^2) - (a^2*B^2*d^3*i^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^
4*g^2) + (2*a*B^2*d^2*(3*b*c - 2*a*d)*i^3*n^2*Log[a + b*x]*Log[(b*(c + d*x)
)/(b*c - a*d)])/(b^4*g^2) - (2*B^2*d*(b*c - a*d)^2*i^3*n^2*Log[a + b*x]*Log
[(b*(c + d*x))/(b*c - a*d)])/(b^4*g^2) + (6*A*B*d*(b*c - a*d)^2*i^3*n*PolyL
og[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^2) - (a^2*B^2*d^3*i^3*n^2*PolyL
og[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^2) + (2*a*B^2*d^2*(3*b*c - 2*a*
d)*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^2) - (2*B^2*d*(
b*c - a*d)^2*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(b^4*g^2) -
(B^2*c^2*d*i^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^2*g^2) + (2*B^
2*c*d*(3*b*c - 2*a*d)*i^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(b^3*g
^2) - (2*B^2*d*(b*c - a*d)^2*i^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])
/(b^4*g^2) + (6*B^2*d*(b*c - a*d)^2*i^3*n*Log[e*((a + b*x)/(c + d*x))^n]*Po
lyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^2) + (6*B^2*d*(b*c - a*d)^2
*i^3*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(183c+183dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2}\,dx = \int\left(\frac{6128487d^2(3bc-2ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^2}+\frac{612848\ldots}{\ldots}\right.$$

$$=\frac{\left(6128487d^3\right)\int x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\,dx}{b^2g^2}+\frac{\left(6128487d^2(3\ldots\right.}{\ldots}$$

$$=\frac{6128487d^2(3bc-2ad)x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^2}+\frac{6128487d\ldots}{\ldots}$$

$$=\frac{6128487d^2(3bc-2ad)x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^2}+\frac{6128487d\ldots}{\ldots}$$

$$=\frac{6128487d^2(3bc-2ad)x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^2}+\frac{6128487d\ldots}{\ldots}$$

$$=\frac{6128487d^2(3bc-2ad)x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^2}+\frac{6128487d\ldots}{\ldots}$$

$$=-\frac{6128487ABd^2(bc-ad)nx}{b^3g^2}-\frac{12256974B(bc-ad)^3n\left(A+B\,\mathrm{l}\ldots\right.}{b^4g^2(a+bx)}$$

$$=-\frac{6128487ABd^2(bc-ad)nx}{b^3g^2}-\frac{6128487B^2d^2(bc-ad)n(a+bx\ldots}{b^4g^2}$$

$$=-\frac{6128487ABd^2(bc-ad)nx}{b^3g^2}-\frac{6128487B^2d^2(bc-ad)n(a+bx\ldots}{b^4g^2}$$

$$=-\frac{6128487ABd^2(bc-ad)nx}{b^3g^2}-\frac{12256974B^2(bc-ad)^3n^2}{b^4g^2(a+bx)}-\frac{122\ldots}{\ldots}$$

$$=-\frac{6128487ABd^2(bc-ad)nx}{b^3g^2}-\frac{12256974B^2(bc-ad)^3n^2}{b^4g^2(a+bx)}-\frac{122\ldots}{\ldots}$$

$$=-\frac{6128487ABd^2(bc-ad)nx}{b^3g^2}-\frac{12256974B^2(bc-ad)^3n^2}{b^4g^2(a+bx)}-\frac{122\ldots}{\ldots}$$

Mathematica [B] time = 14.83, size = 4942, normalized size = 6.69

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g +
 b*g*x)^2,x]
```

```
[Out] (d^2*(3*b*c - 2*a*d)*i^3*x*(A + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(
a + b*x)/(c + d*x)]))^2)/(b^3*g^2) + (d^3*i^3*x^2*(A + B*(Log[e*((a + b*x)/
(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]))^2)/(2*b^2*g^2) + (3*d*(b*c - a
*d)^2*i^3*Log[a + b*x]*(A + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a +
b*x)/(c + d*x)]))^2)/(b^4*g^2) + (-(A^2*b^3*c^3*i^3) + 3*a*A^2*b^2*c^2*d*i^
3 - 3*a^2*A^2*b*c*d^2*i^3 + a^3*A^2*d^3*i^3 - 2*A*b^3*B*c^3*i^3*(Log[e*((a
+ b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) + 6*a*A*b^2*B*c^2*d*i^3*
(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) - 6*a^2*A*b*B
*c*d^2*i^3*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) +
2*a^3*A*B*d^3*i^3*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*
x)]) - b^3*B^2*c^3*i^3*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c
 + d*x)])^2 + 3*a*b^2*B^2*c^2*d*i^3*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log
[(a + b*x)/(c + d*x)])^2 - 3*a^2*b*B^2*c*d^2*i^3*(Log[e*((a + b*x)/(c + d*x
))^n] - n*Log[(a + b*x)/(c + d*x)])^2 + a^3*B^2*d^3*i^3*(Log[e*((a + b*x)/(
c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)/(b^4*g^2*(a + b*x)) + (2*B*c^
3*i^3*n*(A + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]
))*(-(((a/b + x)*(Log[a/b + x] + Log[a/b + x]^2))/((a + b*x)^2*Log[a/b + x]
)) - ((b*(c/d + x)*Log[c/d + x])/((-a + (b*c)/d)^2*(1 - (b*(c/d + x))/(-a +
 (b*c)/d))) + Log[1 - (b*(c/d + x))/(-a + (b*c)/d)]/(-a + (b*c)/d))/b - (-L
og[a/b + x] + Log[c/d + x] + Log[a/(c + d*x) + (b*x)/(c + d*x)])/(b*(a + b*
x))))/g^2 + (2*B*d^3*i^3*n*(A + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(
a + b*x)/(c + d*x)]))*((-2*a*(a/b + x)*(-1 + Log[a/b + x]))/b^3 + (3*a^2*Lo
g[a/b + x]^2)/(2*b^4) + (a^3*(1 + Log[a/b + x]))/(b^4*(a + b*x)) + (2*a*(c/
d + x)*(-1 + Log[c/d + x]))/b^3 + ((a*x)/(2*b) - x^2/4 + (x^2*Log[a/b + x])
/2 - (a^2*Log[a + b*x])/(2*b^2))/b^2 - ((c*x)/(2*d) - x^2/4 + (x^2*Log[c/d
+ x])/2 - (c^2*Log[c + d*x])/(2*d^2))/b^2 + (a^3*(-(Log[c/d + x]/(b*(a + b*
x))) + (d*(Log[a + b*x]/(b*c - a*d) - Log[c + d*x]/(b*c - a*d)))/b))/b^3 +
((-4*a*b*x + b^2*x^2 + (2*a^3)/(a + b*x) + 6*a^2*Log[a + b*x])*(-Log[a/b +
x] + Log[c/d + x] + Log[a/(c + d*x) + (b*x)/(c + d*x)]))/(2*b^4) - (3*a^2*(
(Log[c/d + x]*Log[(a + b*x)/(a - (b*c)/d)])/b + PolyLog[2, (b*d*(c/d + x))/
(b*c - a*d)]/b))/b^3))/g^2 + (6*B*c*d^2*i^3*n*(A + B*(Log[e*((a + b*x)/(c +
 d*x))^n] - n*Log[(a + b*x)/(c + d*x)]))*(((a/b + x)*(-1 + Log[a/b + x]))/b
^2 - (a*Log[a/b + x]^2)/b^3 - (a^2*(1 + Log[a/b + x]))/(b^3*(a + b*x)) - ((
c/d + x)*(-1 + Log[c/d + x]))/b^2 - (a^2*(-(Log[c/d + x]/(b*(a + b*x))) + (
d*(Log[a + b*x]/(b*c - a*d) - Log[c + d*x]/(b*c - a*d)))/b))/b^2 + ((b*x -
a^2/(a + b*x) - 2*a*Log[a + b*x])*(-Log[a/b + x] + Log[c/d + x] + Log[a/(c
+ d*x) + (b*x)/(c + d*x)]))/b^3 + (2*a*((Log[c/d + x]*Log[(a + b*x)/(a - (b
*c)/d)])/b + PolyLog[2, (b*d*(c/d + x))/(b*c - a*d)]/b))/b^2))/g^2 + (6*B*c
^2*d*i^3*n*(A + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*
x)]))*(Log[a/b + x]^2/(2*b^2) + (a*(1 + Log[a/b + x]))/(b^2*(a + b*x)) + (a
*(-(Log[c/d + x]/(b*(a + b*x))) + (d*(Log[a + b*x]/(b*c - a*d) - Log[c + d*
x]/(b*c - a*d)))/b))/b + ((a/(a + b*x) + Log[a + b*x])*(-Log[a/b + x] + Log
[c/d + x] + Log[a/(c + d*x) + (b*x)/(c + d*x)]))/b^2 - ((Log[c/d + x]*Log[(
a + b*x)/(a - (b*c)/d)])/b + PolyLog[2, (b*d*(c/d + x))/(b*c - a*d)]/b)/b))
/g^2 + (B^2*c^3*i^3*n^2*(-2*b*c + 2*a*d - 2*d*(a + b*x)*Log[a + b*x] - 2*(b
*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*d*(a + b*x)*Log[a + b*x]*Log[(a + b*
x)/(c + d*x)] - (b*c - a*d)*Log[(a + b*x)/(c + d*x)]^2 + 2*d*(a + b*x)*Log[
c + d*x] - 2*d*(a + b*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*
d*x)] + d*(a + b*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c
- a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + d*(a + b*x)*(Log[(
b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c -
```

a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b*(b*c - a*d)*g^2*(a + b*x)) + (B^2*d^3*i^3*n^2*((-2*b^2*c^2*(b*c - a*d)*Log[(b*c - a*d)/(c + d*x)])/d^2 + 2*a^2*(-(b*c) + a*d)*Log[(b*c - a*d)/(c + d*x)] - (4*a*b*c*(-(b*c) + a*d)*Log[(b*c - a*d)/(c + d*x)])/d + (b^3*c^3*Log[(a + b*x)/(c + d*x)]^2)/d^2 - (a*b^2*c^2*Log[(a + b*x)/(c + d*x)]^2)/d - ((b*c - a*d)^2*(b*c + 5*a*d)*Log[(a + b*x)/(c + d*x)]^2)/d^2 + (b*c - a*d)*(a + b*x)^2*Log[(a + b*x)/(c + d*x)]^2 + 2*a^2*b*c*Log[(a + b*x)/(c + d*x)]^3 - 2*a^3*d*Log[(a + b*x)/(c + d*x)]^3 + (2*(-(b*c) + a*d)*(a + b*x)*Log[(a + b*x)/(c + d*x)]*(b*c - a*d + 3*a*d*Log[(a + b*x)/(c + d*x)]))/d + (2*a^3*b*(c + d*x)*(2 + 2*Log[(a + b*x)/(c + d*x)] + Log[(a + b*x)/(c + d*x)]^2))/(a + b*x) - 9*a^2*b*c*(Log[(a + b*x)/(c + d*x)]*(Log[(a + b*x)/(c + d*x)] - 2*Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))]) + (4*a*b^2*c^2*(Log[(a + b*x)/(c + d*x)]*(Log[(a + b*x)/(c + d*x)] - 2*Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))]))/d + 5*a^3*d*(Log[(a + b*x)/(c + d*x)]*(Log[(a + b*x)/(c + d*x)] - 2*Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))]) - (b^2*c^2*(b*c - a*d)*(Log[(a + b*x)/(c + d*x)]*(2*Log[(-(b*c) + a*d)/(d*(a + b*x))] + Log[(a + b*x)/(c + d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))]))/d^2 + 2*a^2*(-(b*c) + a*d)*(Log[(a + b*x)/(c + d*x)]^2*(3*Log[(-(b*c) + a*d)/(d*(a + b*x))] + Log[(a + b*x)/(c + d*x)]) - 6*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 6*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))])))/(2*b^4*(b*c - a*d)*g^2) + (B^2*c^2*d*i^3*n^2*(6*b*c - 6*a*d - (6*b^2*c*x)/(a + b*x) + (6*a*b*d*x)/(a + b*x) + 6*a*d*Log[a/b + x] + 3*b*c*Log[a/b + x]^2 - 3*a*d*Log[a/b + x]^2 - 6*b*c*Log[c/d + x] + 6*b*c*Log[a + b*x] - 6*a*d*Log[a + b*x] - 6*b*c*Log[a/b + x]*Log[a + b*x] + 6*a*d*Log[a/b + x]*Log[a + b*x] + 6*b*c*Log[c/d + x]*Log[a + b*x] - 6*a*d*Log[c/d + x]*Log[a + b*x] - 6*b*c*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] + 6*a*d*Log[c/d + x]*Log[(d*(a + b*x))/(-(b*c) + a*d)] - (6*b*(b*c - a*d)*x*Log[(a + b*x)/(c + d*x)])/(a + b*x) + 6*b*c*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 6*a*d*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] + 3*a*d*Log[(a + b*x)/(c + d*x)]^2 + 3*b*d*x*Log[(a + b*x)/(c + d*x)]^2 - (3*b^2*x*(c + d*x)*Log[(a + b*x)/(c + d*x)]^2)/(a + b*x) - 3*b*c*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)]^2 - a*d*Log[(a + b*x)/(c + d*x)]^3 + 6*b*c*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 6*a*d*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 3*a*d*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*(b*c - a*d + a*d*Log[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 6*(b*c - a*d)*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 6*b*c*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 6*a*d*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] + 6*b*c*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))]))/(b^2*(b*c - a*d)*g^2) - (B^2*c*d*i^3*n^2*(6*a^2*b*c*d + 6*a^2*b*d^2*x + 6*a^2*b*c*d*Log[(a + b*x)/(c + d*x)] + 6*a^2*b*d^2*x*Log[(a + b*x)/(c + d*x)] + 12*a^2*b*c*d*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)] + 12*a*b^2*c*d*x*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)] + 6*a^2*b*c*d*Log[(a + b*x)/(c + d*x)]^2 + 3*a^3*d^2*Log[(a + b*x)/(c + d*x)]^2 + 9*a^2*b*d^2*x*Log[(a + b*x)/(c + d*x)]^2 - 3*b^3*c*d*x^2*Log[(a + b*x)/(c + d*x)]^2 + 3*a*b^2*d^2*x^2*Log[(a + b*x)/(c + d*x)]^2 - 6*a^2*b*c*d*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)]^2 - 6*a*b^2*c*d*x*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(a + b*x)/(c + d*x)]^2 - 2*a^3*d^2*Log[(a + b*x)/(c + d*x)]^3 - 2*a^2*b*d^2*x*Log[(a + b*x)/(c + d*x)]^3 - 6*a*b^2*c^2*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 6*a^3*d^2*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 6*b^3*c^2*x*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 6*a^2*b*d^2*x*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*a^3*d^2*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*a^2*b*d^2*x*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*(a + b*x)*(-(b^2*c^2) - a^2*d^2 + 2*a^2*d^2*Log[(a + b*x)/(c + d*x)])*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + 12*a*b*c*d*(a + b*x)*(-1 + Log[(a + b*x)/(c + d*x)])*PolyLog[2, (b*(c + d*x))/(d*(a + b*x))] - 12*a^3*d^2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))] - 12*a^2*b*d^2*x*PolyLog[3, (d*(a

```
 + b*x))/(b*(c + d*x))] + 12*a^2*b*c*d*PolyLog[3, (b*(c + d*x))/(d*(a + b*x
))] + 12*a*b^2*c*d*x*PolyLog[3, (b*(c + d*x))/(d*(a + b*x))]))/(b^3*(b*c -
a*d)*g^2*(a + b*x))
```

fricas [F] time = 0.83, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{A^2d^3i^3x^3+3\,A^2cd^2i^3x^2+3\,A^2c^2di^3x+A^2c^3i^3+\left(B^2d^3i^3x^3+3\,B^2cd^2i^3x^2+3\,B^2c^2di^3x+B^2c^3i^3\right)\mathrm{log}}{b^2g^2x^2+2\,abg^2x+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x,
 algorithm="fricas")
```

```
[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c
^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c
^3*i^3)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2
*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))
/(b^2*g^2*x^2 + 2*a*b*g^2*x + a^2*g^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix+ci)^3\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{\left(bgx+ag\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2,x,
 algorithm="maxima")
```

```
[Out] -2*A*B*c^3*i^3*n*(1/(b^2*g^2*x + a*b*g^2) + d*log(b*x + a)/((b^2*c - a*b*d)
*g^2) - d*log(d*x + c)/((b^2*c - a*b*d)*g^2)) - 3*A^2*(a^2/(b^4*g^2*x + a*b
^3*g^2) - x/(b^2*g^2) + 2*a*log(b*x + a)/(b^3*g^2))*c*d^2*i^3 + 1/2*(2*a^3/
(b^5*g^2*x + a*b^4*g^2) + 6*a^2*log(b*x + a)/(b^4*g^2) + (b*x^2 - 4*a*x)/(b
^3*g^2))*A^2*d^3*i^3 + 3*A^2*c^2*d*i^3*(a/(b^3*g^2*x + a*b^2*g^2) + log(b*x
 + a)/(b^2*g^2)) - 2*A*B*c^3*i^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^
2*g^2*x + a*b*g^2) - A^2*c^3*i^3/(b^2*g^2*x + a*b*g^2) + 1/2*(B^2*b^3*d^3*i
```

```
^3*x^3 + 3*(2*b^3*c*d^2*i^3 - a*b^2*d^3*i^3)*B^2*x^2 + 2*(3*a*b^2*c*d^2*i^3
 - 2*a^2*b*d^3*i^3)*B^2*x - 2*(b^3*c^3*i^3 - 3*a*b^2*c^2*d*i^3 + 3*a^2*b*c*
d^2*i^3 - a^3*d^3*i^3)*B^2 + 6*((b^3*c^2*d*i^3 - 2*a*b^2*c*d^2*i^3 + a^2*b*
d^3*i^3)*B^2*x + (a*b^2*c^2*d*i^3 - 2*a^2*b*c*d^2*i^3 + a^3*d^3*i^3)*B^2)*l
og(b*x + a))*log((d*x + c)^n)^2/(b^5*g^2*x + a*b^4*g^2) - integrate(-(B^2*b
^4*c^4*i^3*log(e)^2 + (B^2*b^4*d^4*i^3*log(e)^2 + 2*A*B*b^4*d^4*i^3*log(e))
*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e)^2 + 2*A*B*b^4*c*d^3*i^3*log(e))*x^3 + 6*
(B^2*b^4*c^2*d^2*i^3*log(e)^2 + 2*A*B*b^4*c^2*d^2*i^3*log(e))*x^2 + (B^2*b^
4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2
*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*log((b*x + a)^n)^2 + 2*(2*B^2*b^4*c^3*d
*i^3*log(e)^2 + 3*A*B*b^4*c^3*d*i^3*log(e))*x + 2*(B^2*b^4*c^4*i^3*log(e) +
 (B^2*b^4*d^4*i^3*log(e) + A*B*b^4*d^4*i^3)*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(
e) + A*B*b^4*c*d^3*i^3)*x^3 + 6*(B^2*b^4*c^2*d^2*i^3*log(e) + A*B*b^4*c^2*d
^2*i^3)*x^2 + (4*B^2*b^4*c^3*d*i^3*log(e) + 3*A*B*b^4*c^3*d*i^3)*x)*log((b*
x + a)^n) - ((2*A*B*b^4*d^4*i^3 + (i^3*n + 2*i^3*log(e))*B^2*b^4*d^4)*x^4 +
 2*(4*A*B*b^4*c*d^3*i^3 - (a*b^3*d^4*i^3*n - (3*i^3*n + 4*i^3*log(e))*b^4*c
*d^3)*B^2)*x^3 - 2*(a*b^3*c^3*d*i^3*n - 3*a^2*b^2*c^2*d^2*i^3*n + 3*a^3*b*c
*d^3*i^3*n - a^4*d^4*i^3*n - b^4*c^4*i^3*log(e))*B^2 + (12*A*B*b^4*c^2*d^2*
i^3 + (12*a*b^3*c*d^3*i^3*n - 7*a^2*b^2*d^4*i^3*n + 12*b^4*c^2*d^2*i^3*log(
e))*B^2)*x^2 + 2*(3*A*B*b^4*c^3*d*i^3 + (3*a*b^3*c^2*d^2*i^3*n - a^3*b*d^4*
i^3*n - (i^3*n - 4*i^3*log(e))*b^4*c^3*d)*B^2)*x + 6*((b^4*c^2*d^2*i^3*n -
2*a*b^3*c*d^3*i^3*n + a^2*b^2*d^4*i^3*n)*B^2*x^2 + 2*(a*b^3*c^2*d^2*i^3*n -
 2*a^2*b^2*c*d^3*i^3*n + a^3*b*d^4*i^3*n)*B^2*x + (a^2*b^2*c^2*d^2*i^3*n -
2*a^3*b*c*d^3*i^3*n + a^4*d^4*i^3*n)*B^2)*log(b*x + a) + 2*(B^2*b^4*d^4*i^3
*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*
d*i^3*x + B^2*b^4*c^4*i^3)*log((b*x + a)^n))*log((d*x + c)^n))/(b^6*d*g^2*x
^3 + a^2*b^4*c*g^2 + (b^6*c*g^2 + 2*a*b^5*d*g^2)*x^2 + (2*a*b^5*c*g^2 + a^2
*b^4*d*g^2)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2}{\left(a\,g+b\,g\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^2,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**2
,x)
```

```
[Out] Timed out
```

3.184 $\int \frac{(ci+dix)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3}\,dx$

Optimal. Leaf size=644

$$\frac{d^3i^3(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{b^4g^3}+\frac{6Bd^2i^3n(bc-ad)\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^3}+\frac{2Bd^2i^3n(bc-a}{}$$

```
[Out] -4*B^2*d*(-a*d+b*c)*i^3*n^2*(d*x+c)/b^3/g^3/(b*x+a)-1/4*B^2*(-a*d+b*c)*i^3*
n^2*(d*x+c)^2/b^2/g^3/(b*x+a)^2-4*B*d*(-a*d+b*c)*i^3*n*(d*x+c)*(A+B*ln(e*((
b*x+a)/(d*x+c))^n))/b^3/g^3/(b*x+a)-1/2*B*(-a*d+b*c)*i^3*n*(d*x+c)^2*(A+B*l
n(e*((b*x+a)/(d*x+c))^n))/b^2/g^3/(b*x+a)^2+d^3*i^3*(b*x+a)*(A+B*ln(e*((b*x
+a)/(d*x+c))^n))^2/b^4/g^3-2*d*(-a*d+b*c)*i^3*(d*x+c)*(A+B*ln(e*((b*x+a)/(d
*x+c))^n))^2/b^3/g^3/(b*x+a)-1/2*(-a*d+b*c)*i^3*(d*x+c)^2*(A+B*ln(e*((b*x+a
)/(d*x+c))^n))^2/b^2/g^3/(b*x+a)^2+2*B*d^2*(-a*d+b*c)*i^3*n*(A+B*ln(e*((b*x
+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/b^4/g^3-3*d^2*(-a*d+b*c)*i^3*(A+B
*ln(e*((b*x+a)/(d*x+c))^n))^2*ln(1-b*(d*x+c)/d/(b*x+a))/b^4/g^3+2*B^2*d^2*(
-a*d+b*c)*i^3*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/b^4/g^3+6*B*d^2*(-a*d+b*c)
*i^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*polylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g
^3+6*B^2*d^2*(-a*d+b*c)*i^3*n^2*polylog(3,b*(d*x+c)/d/(b*x+a))/b^4/g^3
```

Rubi [B] time = 4.81, antiderivative size = 1512, normalized size of antiderivative = 2.35, number of steps used = 88, number of rules used = 21, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.467, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x
)^3,x]
```

```
[Out] -(B^2*(b*c - a*d)^3*i^3*n^2)/(4*b^4*g^3*(a + b*x)^2) - (9*B^2*d*(b*c - a*d)
^2*i^3*n^2)/(2*b^4*g^3*(a + b*x)) - (9*B^2*d^2*(b*c - a*d)*i^3*n^2*Log[a +
b*x])/(2*b^4*g^3) - (3*A*B*d^2*(b*c - a*d)*i^3*n*Log[a + b*x]^2)/(b^4*g^3)
- (a*B^2*d^3*i^3*n^2*Log[a + b*x]^2)/(b^4*g^3) + (5*B^2*d^2*(b*c - a*d)*i^3
*n^2*Log[a + b*x]^2)/(2*b^4*g^3) - (3*B^2*d^2*(b*c - a*d)*i^3*Log[-((b*c -
a*d)/(d*(a + b*x)))]*Log[e*((a + b*x)/(c + d*x))^n]^2)/(b^4*g^3) - (3*B^2*d
^2*(b*c - a*d)*i^3*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/(b^4*g^3)
 - (B*(b*c - a*d)^3*i^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*b^4*g^
3*(a + b*x)^2) - (5*B*d*(b*c - a*d)^2*i^3*n*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]))/(b^4*g^3*(a + b*x)) + (2*a*B*d^3*i^3*n*Log[a + b*x]*(A + B*Log[e*(
(a + b*x)/(c + d*x))^n]))/(b^4*g^3) - (5*B*d^2*(b*c - a*d)*i^3*n*Log[a + b*
x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(b^4*g^3) + (d^3*i^3*x*(A + B*Lo
g[e*((a + b*x)/(c + d*x))^n])^2)/(b^3*g^3) - ((b*c - a*d)^3*i^3*(A + B*Log[
e*((a + b*x)/(c + d*x))^n])^2)/(2*b^4*g^3*(a + b*x)^2) - (3*d*(b*c - a*d)^2
*i^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^4*g^3*(a + b*x)) + (3*d^2
*(b*c - a*d)*i^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^
4*g^3) + (9*B^2*d^2*(b*c - a*d)*i^3*n^2*Log[c + d*x])/(2*b^4*g^3) + (2*B^2*
c*d^2*i^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(b^3*g^3) - (
5*B^2*d^2*(b*c - a*d)*i^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x
])/(b^4*g^3) - (2*B*c*d^2*i^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[
c + d*x])/(b^3*g^3) + (5*B*d^2*(b*c - a*d)*i^3*n*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])*Log[c + d*x])/(b^4*g^3) - (B^2*c*d^2*i^3*n^2*Log[c + d*x]^2)/(
b^3*g^3) + (5*B^2*d^2*(b*c - a*d)*i^3*n^2*Log[c + d*x]^2)/(2*b^4*g^3) + (6*
A*B*d^2*(b*c - a*d)*i^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(b^4
```

```
*g^3) + (2*a*B^2*d^3*i^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(
b^4*g^3) - (5*B^2*d^2*(b*c - a*d)*i^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b
*c - a*d)])/(b^4*g^3) + (6*A*B*d^2*(b*c - a*d)*i^3*n*PolyLog[2, -((d*(a + b
*x))/(b*c - a*d))])/(b^4*g^3) + (2*a*B^2*d^3*i^3*n^2*PolyLog[2, -((d*(a + b
*x))/(b*c - a*d))])/(b^4*g^3) - (5*B^2*d^2*(b*c - a*d)*i^3*n^2*PolyLog[2, -
((d*(a + b*x))/(b*c - a*d))])/(b^4*g^3) + (2*B^2*c*d^2*i^3*n^2*PolyLog[2, (
b*(c + d*x))/(b*c - a*d)])/(b^3*g^3) - (5*B^2*d^2*(b*c - a*d)*i^3*n^2*PolyL
og[2, (b*(c + d*x))/(b*c - a*d)])/(b^4*g^3) + (6*B^2*d^2*(b*c - a*d)*i^3*n*
Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(
b^4*g^3) + (6*B^2*d^2*(b*c - a*d)*i^3*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a
+ b*x))])/(b^4*g^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
```

```
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
```

```
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(184c+184dx)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3}\,dx = \int \left(\frac{6229504d^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^3} + \frac{6229504(bc-a\ldots}{\ldots}\right.$$

$$= \frac{\left(6229504d^3\right)\int \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx}{b^3g^3} + \frac{(18688512d\ldots}{\ldots}$$

$$= \frac{6229504d^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^3} - \frac{3114752(bc-ad)^3\ldots}{b^4g\ldots}$$

$$= \frac{6229504d^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^3} - \frac{3114752(bc-ad)^3\ldots}{b^4g\ldots}$$

$$= \frac{6229504d^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^3} - \frac{3114752(bc-ad)^3\ldots}{b^4g\ldots}$$

$$= \frac{6229504d^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^3} - \frac{3114752(bc-ad)^3\ldots}{b^4g\ldots}$$

$$= -\frac{3114752B(bc-ad)^3n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{b^4g^3(a+bx)^2} - \frac{3114752\ldots}{\ldots}$$

$$= -\frac{18688512B^2d^2(bc-ad)\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^4g^3} - \frac{31\ldots}{\ldots}$$

$$= -\frac{18688512B^2d^2(bc-ad)\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^4g^3} - \ldots$$

$$= -\frac{1557376B^2(bc-ad)^3n^2}{b^4g^3(a+bx)^2} - \frac{28032768B^2d(bc-ad)^2n^2}{b^4g^3(a+bx)} - \frac{2\ldots}{\ldots}$$

$$= -\frac{1557376B^2(bc-ad)^3n^2}{b^4g^3(a+bx)^2} - \frac{28032768B^2d(bc-ad)^2n^2}{b^4g^3(a+bx)} - \frac{2\ldots}{\ldots}$$

$$= -\frac{1557376B^2(bc-ad)^3n^2}{b^4g^3(a+bx)^2} - \frac{28032768B^2d(bc-ad)^2n^2}{b^4g^3(a+bx)} - \frac{2\ldots}{\ldots}$$

Mathematica [B] time = 25.24, size = 6221, normalized size = 9.66

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g +
 b*g*x)^3,x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2d^3i^3x^3 + 3\,A^2cd^2i^3x^2 + 3\,A^2c^2di^3x + A^2c^3i^3 + \left(B^2d^3i^3x^3 + 3\,B^2cd^2i^3x^2 + 3\,B^2c^2di^3x + B^2c^3i^3\right)\log\left(e\right.}{b^3g^3x^3 + 3\,ab^2g^3x^2 + 3\,a^2bg^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x,
 algorithm="fricas")
```

```
[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c
^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c
^3*i^3)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2
*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))
/(b^3*g^3*x^3 + 3*a*b^2*g^3*x^2 + 3*a^2*b*g^3*x + a^3*g^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2}{\left(bgx + ag\right)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3,x,
 algorithm="maxima")
```

```
[Out] -3/2*A*B*c^2*d*i^3*n*((3*a*b*c - a^2*d + 2*(2*b^2*c - a*b*d)*x)/((b^5*c - a
*b^4*d)*g^3*x^2 + 2*(a*b^4*c - a^2*b^3*d)*g^3*x + (a^2*b^3*c - a^3*b^2*d)*g
^3) + 2*(2*b*c*d - a*d^2)*log(b*x + a)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^
2)*g^3) - 2*(2*b*c*d - a*d^2)*log(d*x + c)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^
2*d^2)*g^3)) + 1/2*A*B*c^3*i^3*n*((2*b*d*x - b*c + 3*a*d)/((b^4*c - a*b^3*d
)*g^3*x^2 + 2*(a*b^3*c - a^2*b^2*d)*g^3*x + (a^2*b^2*c - a^3*b*d)*g^3) + 2*
d^2*log(b*x + a)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3) - 2*d^2*log(d*x
```

```
+ c)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^3)) - 1/2*A^2*d^3*i^3*((6*a^2*b
*x + 5*a^3)/(b^6*g^3*x^2 + 2*a*b^5*g^3*x + a^2*b^4*g^3) - 2*x/(b^3*g^3) + 6
*a*log(b*x + a)/(b^4*g^3)) + 3/2*A^2*c*d^2*i^3*((4*a*b*x + 3*a^2)/(b^5*g^3*
x^2 + 2*a*b^4*g^3*x + a^2*b^3*g^3) + 2*log(b*x + a)/(b^3*g^3)) - 3*(2*b*x +
 a)*A*B*c^2*d*i^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^4*g^3*x^2 + 2*a
*b^3*g^3*x + a^2*b^2*g^3) - 3/2*(2*b*x + a)*A^2*c^2*d*i^3/(b^4*g^3*x^2 + 2*
a*b^3*g^3*x + a^2*b^2*g^3) - A*B*c^3*i^3*log(e*(b*x/(d*x + c) + a/(d*x + c)
)^n)/(b^3*g^3*x^2 + 2*a*b^2*g^3*x + a^2*b*g^3) - 1/2*A^2*c^3*i^3/(b^3*g^3*x
^2 + 2*a*b^2*g^3*x + a^2*b*g^3) + 1/2*(2*B^2*b^3*d^3*i^3*x^3 + 4*B^2*a*b^2*
d^3*i^3*x^2 - 2*(3*b^3*c^2*d*i^3 - 6*a*b^2*c*d^2*i^3 + 2*a^2*b*d^3*i^3)*B^2
*x - (b^3*c^3*i^3 + 3*a*b^2*c^2*d*i^3 - 9*a^2*b*c*d^2*i^3 + 5*a^3*d^3*i^3)*
B^2 + 6*((b^3*c*d^2*i^3 - a*b^2*d^3*i^3)*B^2*x^2 + 2*(a*b^2*c*d^2*i^3 - a^2
*b*d^3*i^3)*B^2*x + (a^2*b*c*d^2*i^3 - a^3*d^3*i^3)*B^2)*log(b*x + a))*log(
(d*x + c)^n)^2/(b^6*g^3*x^2 + 2*a*b^5*g^3*x + a^2*b^4*g^3) - integrate(-(4*
B^2*b^4*c^3*d*i^3*x*log(e)^2 + B^2*b^4*c^4*i^3*log(e)^2 + (B^2*b^4*d^4*i^3*
log(e)^2 + 2*A*B*b^4*d^4*i^3*log(e))*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e)^2 +
2*A*B*b^4*c*d^3*i^3*log(e))*x^3 + 6*(B^2*b^4*c^2*d^2*i^3*log(e)^2 + A*B*b^4
*c^2*d^2*i^3*log(e))*x^2 + (B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 +
 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*log((
b*x + a)^n)^2 + 2*(4*B^2*b^4*c^3*d*i^3*x*log(e) + B^2*b^4*c^4*i^3*log(e) +
(B^2*b^4*d^4*i^3*log(e) + A*B*b^4*d^4*i^3)*x^4 + 4*(B^2*b^4*c*d^3*i^3*log(e
) + A*B*b^4*c*d^3*i^3)*x^3 + 3*(2*B^2*b^4*c^2*d^2*i^3*log(e) + A*B*b^4*c^2*
d^2*i^3)*x^2)*log((b*x + a)^n) - (2*(A*B*b^4*d^4*i^3 + (i^3*n + i^3*log(e))
*B^2*b^4*d^4)*x^4 - (9*a*b^3*c^2*d^2*i^3*n - 21*a^2*b^2*c*d^3*i^3*n + 9*a^3
*b*d^4*i^3*n + (i^3*n - 8*i^3*log(e))*b^4*c^3*d)*B^2*x + 2*(4*A*B*b^4*c*d^3
*i^3 + (3*a*b^3*d^4*i^3*n + 4*b^4*c*d^3*i^3*log(e))*B^2)*x^3 - (a*b^3*c^3*d
*i^3*n + 3*a^2*b^2*c^2*d^2*i^3*n - 9*a^3*b*c*d^3*i^3*n + 5*a^4*d^4*i^3*n -
2*b^4*c^4*i^3*log(e))*B^2 + 6*(A*B*b^4*c^2*d^2*i^3 + (2*a*b^3*c*d^3*i^3*n -
 (i^3*n - 2*i^3*log(e))*b^4*c^2*d^2)*B^2)*x^2 + 6*((b^4*c*d^3*i^3*n - a*b^3
*d^4*i^3*n)*B^2*x^3 + 3*(a*b^3*c*d^3*i^3*n - a^2*b^2*d^4*i^3*n)*B^2*x^2 + 3
*(a^2*b^2*c*d^3*i^3*n - a^3*b*d^4*i^3*n)*B^2*x + (a^3*b*c*d^3*i^3*n - a^4*d
^4*i^3*n)*B^2)*log(b*x + a) + 2*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*
x^3 + 6*B^2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*
log((b*x + a)^n))*log((d*x + c)^n))/(b^7*d*g^3*x^4 + a^3*b^4*c*g^3 + (b^7*c
*g^3 + 3*a*b^6*d*g^3)*x^3 + 3*(a*b^6*c*g^3 + a^2*b^5*d*g^3)*x^2 + (3*a^2*b^
5*c*g^3 + a^3*b^4*d*g^3)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2}{\left(a\,g+b\,g\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^3,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**3
,x)
```

```
[Out] Timed out
```

3.185 $\int \frac{(ci+dix)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^4}\,dx$

Optimal. Leaf size=561

$$\frac{2Bd^3i^3n\text{Li}_2\left(\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{b^4g^4}-\frac{d^3i^3\log\left(1-\frac{b(c+dx)}{d(a+bx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{b^4g^4}-\frac{d^2i^3(c+dx)\left(B\log\right.}{b^3g^4(}$$

```
[Out] -2*B^2*d^2*i^3*n^2*(d*x+c)/b^3/g^4/(b*x+a)-1/4*B^2*d*i^3*n^2*(d*x+c)^2/b^2/
g^4/(b*x+a)^2-2/27*B^2*i^3*n^2*(d*x+c)^3/b/g^4/(b*x+a)^3-2*B*d^2*i^3*n*(d*x
+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^3/g^4/(b*x+a)-1/2*B*d*i^3*n*(d*x+c)^2
*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/b^2/g^4/(b*x+a)^2-2/9*B*i^3*n*(d*x+c)^3*(A
+B*ln(e*((b*x+a)/(d*x+c))^n))/b/g^4/(b*x+a)^3-d^2*i^3*(d*x+c)*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))^2/b^3/g^4/(b*x+a)-1/2*d*i^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)
/(d*x+c))^n))^2/b^2/g^4/(b*x+a)^2-1/3*i^3*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x
+c))^n))^2/b/g^4/(b*x+a)^3-d^3*i^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2*ln(1-b
*(d*x+c)/d/(b*x+a))/b^4/g^4+2*B*d^3*i^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*p
olylog(2,b*(d*x+c)/d/(b*x+a))/b^4/g^4+2*B^2*d^3*i^3*n^2*polylog(3,b*(d*x+c)
/d/(b*x+a))/b^4/g^4
```

Rubi [B] time = 5.09, antiderivative size = 1170, normalized size of antiderivative = 2.09, number of steps used = 100, number of rules used = 20, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610}

$$\frac{11B^2d^3n^2\log^2(a+bx)i^3}{6b^4g^4}-\frac{ABd^3n\log^2(a+bx)i^3}{b^4g^4}-\frac{B^2d^3\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)i^3}{b^4g^4}-\frac{B^2d^3\log(a+bx)\log^2\left(\right.}{b^4g^4}$$

Antiderivative was successfully verified.

```
[In] Int[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g + b*g*x
)^4,x]
```

```
[Out] (-2*B^2*(b*c - a*d)^3*i^3*n^2)/(27*b^4*g^4*(a + b*x)^3) - (17*B^2*d*(b*c -
a*d)^2*i^3*n^2)/(36*b^4*g^4*(a + b*x)^2) - (49*B^2*d^2*(b*c - a*d)*i^3*n^2)
/(18*b^4*g^4*(a + b*x)) - (49*B^2*d^3*i^3*n^2*Log[a + b*x])/(18*b^4*g^4) -
(A*B*d^3*i^3*n*Log[a + b*x]^2)/(b^4*g^4) + (11*B^2*d^3*i^3*n^2*Log[a + b*x]
^2)/(6*b^4*g^4) - (B^2*d^3*i^3*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*((a
+ b*x)/(c + d*x))^n]^2)/(b^4*g^4) - (B^2*d^3*i^3*Log[a + b*x]*Log[e*((a + b
*x)/(c + d*x))^n]^2)/(b^4*g^4) - (2*B*(b*c - a*d)^3*i^3*n*(A + B*Log[e*((a
+ b*x)/(c + d*x))^n]))/(9*b^4*g^4*(a + b*x)^3) - (7*B*d*(b*c - a*d)^2*i^3*n
*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*b^4*g^4*(a + b*x)^2) - (11*B*d^
2*(b*c - a*d)*i^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*b^4*g^4*(a +
 b*x)) - (11*B*d^3*i^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
))/(3*b^4*g^4) - ((b*c - a*d)^3*i^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^
2)/(3*b^4*g^4*(a + b*x)^3) - (3*d*(b*c - a*d)^2*i^3*(A + B*Log[e*((a + b*x)
/(c + d*x))^n])^2)/(2*b^4*g^4*(a + b*x)^2) - (3*d^2*(b*c - a*d)*i^3*(A + B*
Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^4*g^4*(a + b*x)) + (d^3*i^3*Log[a + b
*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(b^4*g^4) + (49*B^2*d^3*i^3*n
^2*Log[c + d*x])/(18*b^4*g^4) - (11*B^2*d^3*i^3*n^2*Log[-((d*(a + b*x))/(b*
c - a*d))]*Log[c + d*x])/(3*b^4*g^4) + (11*B*d^3*i^3*n*(A + B*Log[e*((a + b
*x)/(c + d*x))^n])*Log[c + d*x])/(3*b^4*g^4) + (11*B^2*d^3*i^3*n^2*Log[c +
d*x]^2)/(6*b^4*g^4) + (2*A*B*d^3*i^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c
- a*d)])/(b^4*g^4) - (11*B^2*d^3*i^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*
c - a*d)])/(3*b^4*g^4) + (2*A*B*d^3*i^3*n*PolyLog[2, -((d*(a + b*x))/(b*c -
```

```
a*d))])/(b^4*g^4) - (11*B^2*d^3*i^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c -
a*d))])/(3*b^4*g^4) - (11*B^2*d^3*i^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a
*d)])/(3*b^4*g^4) + (2*B^2*d^3*i^3*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog
[2, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^4) + (2*B^2*d^3*i^3*n^2*PolyLog[
3, 1 + (b*c - a*d)/(d*(a + b*x))])/(b^4*g^4)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
```

```
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
```

```
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(185c+185dx)^3 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^4}\,dx = \int\left(\frac{6331625(bc-ad)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{b^3g^4(a+bx)^4}+\frac{18994875d\ldots}{\ldots}\right.$$

$$= \frac{\left(6331625d^3\right)\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}dx}{b^3g^4}+\frac{\left(18994875d^2(bc-ad)\ldots\right.}{b\ldots}$$

$$= -\frac{6331625(bc-ad)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^4g^4(a+bx)^3}-\frac{18994875d(b\ldots}{\ldots}$$

$$= -\frac{6331625(bc-ad)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^4g^4(a+bx)^3}-\frac{18994875d(b\ldots}{\ldots}$$

$$= -\frac{6331625(bc-ad)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^4g^4(a+bx)^3}-\frac{18994875d(b\ldots}{\ldots}$$

$$= -\frac{6331625(bc-ad)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{3b^4g^4(a+bx)^3}-\frac{18994875d(b\ldots}{\ldots}$$

$$= -\frac{12663250B(bc-ad)^3n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{9b^4g^4(a+bx)^3}-\frac{44321375\ldots}{\ldots}$$

$$= -\frac{6331625B^2d^3\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^4g^4}-\frac{12663250B(bc-\ldots}{\ldots}$$

$$= -\frac{6331625B^2d^3\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{b^4g^4}-\frac{6331625B^2d^3\ldots}{\ldots}$$

$$= -\frac{12663250B^2(bc-ad)^3n^2}{27b^4g^4(a+bx)^3}-\frac{107637625B^2d(bc-ad)^2n^2}{36b^4g^4(a+bx)^2}-\frac{31\ldots}{\ldots}$$

$$= -\frac{12663250B^2(bc-ad)^3n^2}{27b^4g^4(a+bx)^3}-\frac{107637625B^2d(bc-ad)^2n^2}{36b^4g^4(a+bx)^2}-\frac{31\ldots}{\ldots}$$

$$= -\frac{12663250B^2(bc-ad)^3n^2}{27b^4g^4(a+bx)^3}-\frac{107637625B^2d(bc-ad)^2n^2}{36b^4g^4(a+bx)^2}-\frac{31\ldots}{\ldots}$$

Mathematica [B] time = 8.17, size = 8775, normalized size = 15.64

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((c*i + d*i*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(a*g +
 b*g*x)^4,x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2d^3i^3x^3 + 3\,A^2cd^2i^3x^2 + 3\,A^2c^2di^3x + A^2c^3i^3 + \left(B^2d^3i^3x^3 + 3\,B^2cd^2i^3x^2 + 3\,B^2c^2di^3x + B^2c^3i^3\right)\log}{b^4g^4x^4 + 4\,ab^3g^4x^3 + 6\,a^2b^2g^4x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x,
 algorithm="fricas")
```

```
[Out] integral((A^2*d^3*i^3*x^3 + 3*A^2*c*d^2*i^3*x^2 + 3*A^2*c^2*d*i^3*x + A^2*c
^3*i^3 + (B^2*d^3*i^3*x^3 + 3*B^2*c*d^2*i^3*x^2 + 3*B^2*c^2*d*i^3*x + B^2*c
^3*i^3)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*d^3*i^3*x^3 + 3*A*B*c*d^2
*i^3*x^2 + 3*A*B*c^2*d*i^3*x + A*B*c^3*i^3)*log(e*((b*x + a)/(d*x + c))^n))
/(b^4*g^4*x^4 + 4*a*b^3*g^4*x^3 + 6*a^2*b^2*g^4*x^2 + 4*a^3*b*g^4*x + a^4*g
^4), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(dix + ci)^3 \left(B \ln\left(e \left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2}{\left(bgx + ag\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4,x)
```

```
[Out] int((d*i*x+c*i)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4,x,
 algorithm="maxima")
```

```
[Out] -1/3*A*B*c*d^2*i^3*n*((11*a^2*b^2*c^2 - 7*a^3*b*c*d + 2*a^4*d^2 + 6*(3*b^4*
c^2 - 3*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 3*(9*a*b^3*c^2 - 7*a^2*b^2*c*d + 2*a
^3*b*d^2)*x)/((b^8*c^2 - 2*a*b^7*c*d + a^2*b^6*d^2)*g^4*x^3 + 3*(a*b^7*c^2
- 2*a^2*b^6*c*d + a^3*b^5*d^2)*g^4*x^2 + 3*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a
^4*b^4*d^2)*g^4*x + (a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*g^4) + 6*(3
*b^2*c^2*d - 3*a*b*c*d^2 + a^2*d^3)*log(b*x + a)/((b^6*c^3 - 3*a*b^5*c^2*d
```

```
+ 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4) - 6*(3*b^2*c^2*d - 3*a*b*c*d^2 + a^2*
d^3)*log(d*x + c)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3
)*g^4)) - 1/9*A*B*c^3*i^3*n*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^
2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*g
^4*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*g^4*x^2 + 3*(a^2*b^4*c
^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*g^4*x + (a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^
5*b*d^2)*g^4) + 6*d^3*log(b*x + a)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*
d^2 - a^3*b*d^3)*g^4) - 6*d^3*log(d*x + c)/((b^4*c^3 - 3*a*b^3*c^2*d + 3*a^
2*b^2*c*d^2 - a^3*b*d^3)*g^4)) - 1/6*A*B*c^2*d*i^3*n*((5*a*b^2*c^2 - 22*a^2
*b*c*d + 5*a^3*d^2 - 6*(3*b^3*c*d - a*b^2*d^2)*x^2 + 3*(3*b^3*c^2 - 16*a*b^
2*c*d + 5*a^2*b*d^2)*x)/((b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*g^4*x^3 + 3*
(a*b^6*c^2 - 2*a^2*b^5*c*d + a^3*b^4*d^2)*g^4*x^2 + 3*(a^2*b^5*c^2 - 2*a^3*
b^4*c*d + a^4*b^3*d^2)*g^4*x + (a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d^2)*
g^4) - 6*(3*b*c*d^2 - a*d^3)*log(b*x + a)/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2
*b^3*c*d^2 - a^3*b^2*d^3)*g^4) + 6*(3*b*c*d^2 - a*d^3)*log(d*x + c)/((b^5*c
^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*g^4)) + 1/6*A^2*d^3*i^3
*((18*a*b^2*x^2 + 27*a^2*b*x + 11*a^3)/(b^7*g^4*x^3 + 3*a*b^6*g^4*x^2 + 3*a
^2*b^5*g^4*x + a^3*b^4*g^4) + 6*log(b*x + a)/(b^4*g^4)) - (3*b*x + a)*A*B*c
^2*d*i^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^5*g^4*x^3 + 3*a*b^4*g^4*
x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - 2*(3*b^2*x^2 + 3*a*b*x + a^2)*A*B*c*
d^2*i^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^6*g^4*x^3 + 3*a*b^5*g^4*x
^2 + 3*a^2*b^4*g^4*x + a^3*b^3*g^4) - 1/2*(3*b*x + a)*A^2*c^2*d*i^3/(b^5*g^
4*x^3 + 3*a*b^4*g^4*x^2 + 3*a^2*b^3*g^4*x + a^3*b^2*g^4) - (3*b^2*x^2 + 3*a
*b*x + a^2)*A^2*c*d^2*i^3/(b^6*g^4*x^3 + 3*a*b^5*g^4*x^2 + 3*a^2*b^4*g^4*x
+ a^3*b^3*g^4) - 2/3*A*B*c^3*i^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^
4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) - 1/3*A^2*c^3*i^
3/(b^4*g^4*x^3 + 3*a*b^3*g^4*x^2 + 3*a^2*b^2*g^4*x + a^3*b*g^4) - 1/6*(18*(
b^3*c*d^2*i^3 - a*b^2*d^3*i^3)*B^2*x^2 + 9*(b^3*c^2*d*i^3 + 2*a*b^2*c*d^2*i
^3 - 3*a^2*b*d^3*i^3)*B^2*x + (2*b^3*c^3*i^3 + 3*a*b^2*c^2*d*i^3 + 6*a^2*b*
c*d^2*i^3 - 11*a^3*d^3*i^3)*B^2 - 6*(B^2*b^3*d^3*i^3*x^3 + 3*B^2*a*b^2*d^3*
i^3*x^2 + 3*B^2*a^2*b*d^3*i^3*x + B^2*a^3*d^3*i^3)*log(b*x + a))*log((d*x +
 c)^n)^2/(b^7*g^4*x^3 + 3*a*b^6*g^4*x^2 + 3*a^2*b^5*g^4*x + a^3*b^4*g^4) -
integrate(-1/3*(18*B^2*b^4*c^2*d^2*i^3*x^2*log(e)^2 + 12*B^2*b^4*c^3*d*i^3*
x*log(e)^2 + 3*B^2*b^4*c^4*i^3*log(e)^2 + 3*(B^2*b^4*d^4*i^3*log(e)^2 + 2*A
*B*b^4*d^4*i^3*log(e))*x^4 + 6*(2*B^2*b^4*c*d^3*i^3*log(e)^2 + A*B*b^4*c*d^
3*i^3*log(e))*x^3 + 3*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^
2*b^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*log((b*x +
 a)^n)^2 + 6*(6*B^2*b^4*c^2*d^2*i^3*x^2*log(e) + 4*B^2*b^4*c^3*d*i^3*x*log(
e) + B^2*b^4*c^4*i^3*log(e) + (B^2*b^4*d^4*i^3*log(e) + A*B*b^4*d^4*i^3)*x^
4 + (4*B^2*b^4*c*d^3*i^3*log(e) + A*B*b^4*c*d^3*i^3)*x^3)*log((b*x + a)^n)
+ (9*(4*a*b^3*c*d^3*i^3*n - 5*a^2*b^2*d^4*i^3*n + (i^3*n - 4*i^3*log(e))*b^
4*c^2*d^2)*B^2*x^2 - 6*(B^2*b^4*d^4*i^3*log(e) + A*B*b^4*d^4*i^3)*x^4 + 2*(
6*a*b^3*c^2*d^2*i^3*n + 12*a^2*b^2*c*d^3*i^3*n - 19*a^3*b*d^4*i^3*n + (i^3*
n - 12*i^3*log(e))*b^4*c^3*d)*B^2*x - 6*(A*B*b^4*c*d^3*i^3 + (3*a*b^3*d^4*i
^3*n - (3*i^3*n - 4*i^3*log(e))*b^4*c*d^3)*B^2)*x^3 + (2*a*b^3*c^3*d*i^3*n
+ 3*a^2*b^2*c^2*d^2*i^3*n + 6*a^3*b*c*d^3*i^3*n - 11*a^4*d^4*i^3*n - 6*b^4*
c^4*i^3*log(e))*B^2 - 6*(B^2*b^4*d^4*i^3*n*x^4 + 4*B^2*a*b^3*d^4*i^3*n*x^3
+ 6*B^2*a^2*b^2*d^4*i^3*n*x^2 + 4*B^2*a^3*b*d^4*i^3*n*x + B^2*a^4*d^4*i^3*n
)*log(b*x + a) - 6*(B^2*b^4*d^4*i^3*x^4 + 4*B^2*b^4*c*d^3*i^3*x^3 + 6*B^2*b
^4*c^2*d^2*i^3*x^2 + 4*B^2*b^4*c^3*d*i^3*x + B^2*b^4*c^4*i^3)*log((b*x + a)
^n))*log((d*x + c)^n))/(b^8*d*g^4*x^5 + a^4*b^4*c*g^4 + (b^8*c*g^4 + 4*a*b^
7*d*g^4)*x^4 + 2*(2*a*b^7*c*g^4 + 3*a^2*b^6*d*g^4)*x^3 + 2*(3*a^2*b^6*c*g^4
 + 2*a^3*b^5*d*g^4)*x^2 + (4*a^3*b^5*c*g^4 + a^4*b^4*d*g^4)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^3\left(A+B\,\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2}{\left(a\,g+b\,g\,x\right)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^4,x)
```

```
[Out] int(((c*i + d*i*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^4, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**4
,x)
```

```
[Out] Timed out
```

3.186 $\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ci+dix}\,dx$

Optimal. Leaf size=768

$$\frac{b^3g^3(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{3d^4i}-\frac{3b^2g^3(c+dx)^2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2d^4i}-\frac{b^2Bg^3n(c+dx)^2(bc-}{}$$

```
[Out] 1/3*b*B^2*(-a*d+b*c)^2*g^3*n^2*x/d^3/i+7/3*B*(-a*d+b*c)^2*g^3*n*(b*x+a)*(A+
B*ln(e*((b*x+a)/(d*x+c))^n))/d^3/i-1/3*b^2*B*(-a*d+b*c)*g^3*n*(d*x+c)^2*(A+
B*ln(e*((b*x+a)/(d*x+c))^n))/d^4/i+3*(-a*d+b*c)^2*g^3*(b*x+a)*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))^2/d^3/i-3/2*b^2*(-a*d+b*c)*g^3*(d*x+c)^2*(A+B*ln(e*((b*x
+a)/(d*x+c))^n))^2/d^4/i+1/3*b^3*g^3*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^
n))^2/d^4/i+6*B*(-a*d+b*c)^3*g^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d
+b*c)/b/(d*x+c))/d^4/i+(-a*d+b*c)^3*g^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2*l
n((-a*d+b*c)/b/(d*x+c))/d^4/i+1/3*B^2*(-a*d+b*c)^3*g^3*n^2*ln((b*x+a)/(d*x+
c))/d^4/i-2*B^2*(-a*d+b*c)^3*g^3*n^2*ln(d*x+c)/d^4/i-7/3*B*(-a*d+b*c)^3*g^3
*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(b*x+a))/d^4/i+6*B^2*(-
a*d+b*c)^3*g^3*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i+2*B*(-a*d+b*c)^3*g^
3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*polylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i+7/
3*B^2*(-a*d+b*c)^3*g^3*n^2*polylog(2,b*(d*x+c)/d/(b*x+a))/d^4/i-2*B^2*(-a*d
+b*c)^3*g^3*n^2*polylog(3,d*(b*x+a)/b/(d*x+c))/d^4/i
```

Rubi [B] time = 5.59, antiderivative size = 1952, normalized size of antiderivative = 2.54, number of steps used = 101, number of rules used = 28, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.622, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 43, 6688, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x
),x]
```

```
[Out] (5*A*b*B*(b*c - a*d)^2*g^3*n*x)/(3*d^3*i) + (b*B^2*(b*c - a*d)^2*g^3*n^2*x)
/(3*d^3*i) - (a*B^2*(b*c - a*d)^2*g^3*n^2*Log[a + b*x]^2)/(d^3*i) + (5*B^2*
(b*c - a*d)^2*g^3*n*(a + b*x)*Log[e*((a + b*x)/(c + d*x))^n])/(3*d^3*i) - (
B*(b*c - a*d)*g^3*n*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*
d^2*i) + (2*a*B*(b*c - a*d)^2*g^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n]))/(d^3*i) + (b*(b*c - a*d)^2*g^3*x*(A + B*Log[e*((a + b*x)/(c +
 d*x))^n])^2)/(d^3*i) - ((b*c - a*d)*g^3*(a + b*x)^2*(A + B*Log[e*((a + b*x
)/(c + d*x))^n])^2)/(2*d^2*i) + (g^3*(a + b*x)^3*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])^2)/(3*d*i) - (2*B^2*(b*c - a*d)^3*g^3*n^2*Log[c + d*x])/(d^4*i
) + (2*b*B^2*c*(b*c - a*d)^2*g^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[
c + d*x])/(d^4*i) + (5*B^2*(b*c - a*d)^3*g^3*n^2*Log[-((d*(a + b*x))/(b*c -
 a*d))]*Log[c + d*x])/(3*d^4*i) - (2*b*B*c*(b*c - a*d)^2*g^3*n*(A + B*Log[e
*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(d^4*i) - (5*B*(b*c - a*d)^3*g^3*n
*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(3*d^4*i) - (b*B^2*c*
(b*c - a*d)^2*g^3*n^2*Log[c + d*x]^2)/(d^4*i) - (5*B^2*(b*c - a*d)^3*g^3*n^
2*Log[c + d*x]^2)/(6*d^4*i) + (2*a*B^2*(b*c - a*d)^2*g^3*n^2*Log[a + b*x]*L
og[(b*(c + d*x))/(b*c - a*d)])/(d^3*i) - (B^2*(b*c - a*d)^3*g^3*Log[(a + b*
x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4*i) + (B^2*(b*c - a*d)^3*g^3*Lo
g[(a + b*x)^n]^2*Log[i*(c + d*x)])/(d^4*i) - (A*B*(b*c - a*d)^3*g^3*n*Log[i
*(c + d*x)]^2)/(d^4*i) + (B^2*(b*c - a*d)^3*g^3*n^2*Log[a + b*x]*Log[i*(c +
 d*x)]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*n^2*Log[-((d*(a + b*x))/(b*c - a
*d))]*Log[i*(c + d*x)]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*n^2*Log[i*(c + d
```

```
*x)]^3)/(3*d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*n*Log[a + b*x]*Log[i*(c + d*x)
]*Log[(c + d*x)^(-n)])/(d^4*i) + (B^2*(b*c - a*d)^3*g^3*Log[a + b*x]*Log[(c
 + d*x)^(-n)]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*Log[-((d*(a + b*x))/(b*c
- a*d))]*Log[(c + d*x)^(-n)]^2)/(d^4*i) + (2*A*B*(b*c - a*d)^3*g^3*n*Log[-(
(d*(a + b*x))/(b*c - a*d))]*Log[c*i + d*i*x])/(d^4*i) - ((b*c - a*d)^3*g^3*
(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c*i + d*i*x])/(d^4*i) - (2*B^2
*(b*c - a*d)^3*g^3*n*Log[-((d*(a + b*x))/(b*c - a*d))]*(Log[(a + b*x)^n] -
Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*Log[c*i + d*i*x])/(d^
4*i) + (B^2*(b*c - a*d)^3*g^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c*i
 + d*i*x]^2)/(d^4*i) - (B^2*(b*c - a*d)^3*g^3*n*Log[e*((a + b*x)/(c + d*x))
^n]*Log[c*i + d*i*x]^2)/(d^4*i) + (2*a*B^2*(b*c - a*d)^2*g^3*n^2*PolyLog[2,
 -((d*(a + b*x))/(b*c - a*d))])/(d^3*i) - (2*B^2*(b*c - a*d)^3*g^3*n*Log[(a
 + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^4*i) + (2*A*B*(b*c
- a*d)^3*g^3*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i) + (2*b*B^2*c*
(b*c - a*d)^2*g^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i) + (5*B
^2*(b*c - a*d)^3*g^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(3*d^4*i) +
 (2*B^2*(b*c - a*d)^3*g^3*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b
*c - a*d)])/(d^4*i) - (2*B^2*(b*c - a*d)^3*g^3*n*(Log[(a + b*x)^n] - Log[e*
((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b
*c - a*d)])/(d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*n^2*PolyLog[3, -((d*(a + b*x
))/(b*c - a*d))])/(d^4*i) + (2*B^2*(b*c - a*d)^3*g^3*n^2*PolyLog[3, (b*(c +
 d*x))/(b*c - a*d)])/(d^4*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
```

```
Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
```

```
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{186c+186dx}\,dx = \int\left(\frac{b(bc-ad)^2g^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{186d^3} + \frac{(-bc+ad)^3g^3\left(A\right.}{d^3(186}\right.$$

$$= \frac{(bg)\int(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx}{186d} - \frac{\left(b(bc-ad)g^2\right)}{}$$

$$= \frac{b(bc-ad)^2g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{186d^3} - \frac{(bc-ad)g^3(a+bx)^2}{3}$$

$$= \frac{b(bc-ad)^2g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{186d^3} - \frac{(bc-ad)g^3(a+bx)^2}{3}$$

$$= \frac{b(bc-ad)^2g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{186d^3} - \frac{(bc-ad)g^3(a+bx)^2}{3}$$

$$= \frac{b(bc-ad)^2g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{186d^3} - \frac{(bc-ad)g^3(a+bx)^2}{3}$$

$$= \frac{5AbB(bc-ad)^2g^3nx}{558d^3} - \frac{B(bc-ad)g^3n(a+bx)^2\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{558d^2}$$

$$= \frac{5AbB(bc-ad)^2g^3nx}{558d^3} + \frac{5B^2(bc-ad)^2g^3n(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.}{558d^3}$$

$$= \frac{5AbB(bc-ad)^2g^3nx}{558d^3} + \frac{5B^2(bc-ad)^2g^3n(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.}{558d^3}$$

$$= \frac{5AbB(bc-ad)^2g^3nx}{558d^3} + \frac{bB^2(bc-ad)^2g^3n^2x}{558d^3} + \frac{5B^2(bc-ad)^2g^3n}{}$$

$$= \frac{5AbB(bc-ad)^2g^3nx}{558d^3} + \frac{bB^2(bc-ad)^2g^3n^2x}{558d^3} - \frac{aB^2(bc-ad)^2g^3n}{186d}$$

$$= \frac{5AbB(bc-ad)^2g^3nx}{558d^3} + \frac{bB^2(bc-ad)^2g^3n^2x}{558d^3} - \frac{aB^2(bc-ad)^2g^3n}{186d}$$

$$= \frac{5AbB(bc-ad)^2g^3nx}{558d^3} + \frac{bB^2(bc-ad)^2g^3n^2x}{558d^3} - \frac{aB^2(bc-ad)^2g^3n}{186d}$$

$$= \frac{5AbB(bc-ad)^2g^3nx}{558d^3} + \frac{bB^2(bc-ad)^2g^3n^2x}{558d^3} - \frac{aB^2(bc-ad)^2g^3n}{186d}$$

$$= \frac{5AbB(bc-ad)^2g^3nx}{558d^3} + \frac{bB^2(bc-ad)^2g^3n^2x}{558d^3} - \frac{aB^2(bc-ad)^2g^3n}{186d}$$

Mathematica [B] time = 4.33, size = 3265, normalized size = 4.25

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i +
 d*i*x),x]
```

```
[Out] (g^3*(6*b*d*(b^2*c^2 - 3*a*b*c*d + 3*a^2*d^2)*x*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 - 3*b^2*d^2*(b*c - 3*a*d)*x^2*
(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2 + 2
*b^3*d^3*x^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c +
 d*x)])^2 - 6*(b*c - a*d)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log
[(a + b*x)/(c + d*x)])^2*Log[c + d*x] + 18*a*B*d*n*(A + B*Log[e*((a + b*x)/
(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(-2*b^2*c^2 + 2*a*b*c*d - b^2
*c*d*x + a*b*d^2*x + 2*b^2*c^2*Log[c/d + x] - b^2*c^2*Log[c/d + x]^2 - a^2*
d^2*Log[a + b*x] - 2*b^2*c*d*x*Log[(a + b*x)/(c + d*x)] + b^2*d^2*x^2*Log[(
a + b*x)/(c + d*x)] + b^2*c^2*Log[c + d*x] + 2*b^2*c^2*Log[c/d + x]*Log[c +
 d*x] + 2*b^2*c^2*Log[(a + b*x)/(c + d*x)]*Log[c + d*x] - 2*b*c*Log[a/b + x
]*(a*d + b*c*Log[c + d*x] - b*c*Log[(b*(c + d*x))/(b*c - a*d)]) + 2*b^2*c^2
*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 2*B*n*(-A - B*Log[e*((a + b*x)
/(c + d*x))^n] + B*n*Log[(a + b*x)/(c + d*x)])*(6*b^3*c^3 - 6*a*b^2*c^2*d +
 5*b^3*c^2*d*x - 3*a*b^2*c*d^2*x - 2*a^2*b*d^3*x - b^3*c*d^2*x^2 + a*b^2*d^
3*x^2 - 6*b^3*c^3*Log[c/d + x] + 3*b^3*c^3*Log[c/d + x]^2 + 3*a^2*b*c*d^2*L
og[a + b*x] + 2*a^3*d^3*Log[a + b*x] + 6*b^3*c^2*d*x*Log[(a + b*x)/(c + d*x
)] - 3*b^3*c*d^2*x^2*Log[(a + b*x)/(c + d*x)] + 2*b^3*d^3*x^3*Log[(a + b*x)
/(c + d*x)] - 5*b^3*c^3*Log[c + d*x] - 6*b^3*c^3*Log[c/d + x]*Log[c + d*x]
- 6*b^3*c^3*Log[(a + b*x)/(c + d*x)]*Log[c + d*x] + 6*b^2*c^2*Log[a/b + x]*
(a*d + b*c*Log[c + d*x] - b*c*Log[(b*(c + d*x))/(b*c - a*d)]) - 6*b^3*c^3*P
olyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 6*a^3*B*d^3*n*(A + B*Log[e*((a +
 b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(Log[c/d + x]^2 + 2*(Lo
g[a/b + x] - Log[c/d + x] - Log[(a + b*x)/(c + d*x)])*Log[c + d*x] - 2*(Log
[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c)
 + a*d)])) - 18*a^2*B*d^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log
[(a + b*x)/(c + d*x)])*(-2*d*(a + b*x)*(-1 + Log[a/b + x]) + 2*b*(c + d*x)*
(-1 + Log[c/d + x]) - b*c*Log[c/d + x]^2 + 2*b*(Log[a/b + x] - Log[c/d + x]
 - Log[(a + b*x)/(c + d*x)])*(d*x - c*Log[c + d*x]) + 2*b*c*(Log[a/b + x]*L
og[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))
+ 18*a^2*B^2*d^2*n^2*(d*(a + b*x)*Log[(a + b*x)/(c + d*x)]^2 + b*c*Log[(a +
 b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - (b*c - a*d)*(Log[(b*c -
 a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - 2*Log[(a + b*x)
/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/
(b*c - a*d)]) + 2*b*c*(Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b
*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])) + 9*a*B^2*d*n^2*(2
*d*(-(b*c) + a*d)*(a + b*x)*Log[(a + b*x)/(c + d*x)] - 2*a^2*d^2*Log[a + b*
x]*Log[(a + b*x)/(c + d*x)] + b^2*d^2*x^2*Log[(a + b*x)/(c + d*x)]^2 - 2*b*
c*d*(a + b*x)*Log[(a + b*x)/(c + d*x)]^2 + 2*(b*c - a*d)^2*Log[c + d*x] - 2
*b^2*c^2*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 2*b^2*c^
2*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + a^2*d^2*(Log[
a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (
d*(a + b*x))/(-(b*c) + a*d)]) + b^2*c^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*
Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*Pol
yLog[2, (b*(c + d*x))/(b*c - a*d)]) + 2*b*c*(b*c - a*d)*(Log[(b*c - a*d)/(b
*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - 2*Log[(a + b*x)/(c + d*
x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a
*d)]) - 4*b^2*c^2*(Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c
+ d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])) - 6*a^3*B^2*d^3*n^2*(L
og[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*Log[(a + b*x)/
(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 2*PolyLog[3, (d*(a + b
```

```
*x))/(b*(c + d*x))]) + B^2*n^2*(2*b^3*c^2*d*x - 4*a*b^2*c*d^2*x + 2*a^2*b*d
^3*x + 2*a^2*b*c*d^2*Log[a + b*x] - 2*a^3*d^3*Log[a + b*x] - 3*a^2*b*c*d^2*
Log[a + b*x]^2 - 2*a^3*d^3*Log[a + b*x]^2 + 10*a*b^2*c^2*d*Log[(a + b*x)/(c
 + d*x)] - 6*a^2*b*c*d^2*Log[(a + b*x)/(c + d*x)] - 4*a^3*d^3*Log[(a + b*x)
/(c + d*x)] + 10*b^3*c^2*d*x*Log[(a + b*x)/(c + d*x)] - 6*a*b^2*c*d^2*x*Log
[(a + b*x)/(c + d*x)] - 4*a^2*b*d^3*x*Log[(a + b*x)/(c + d*x)] - 2*b^3*c*d^
2*x^2*Log[(a + b*x)/(c + d*x)] + 2*a*b^2*d^3*x^2*Log[(a + b*x)/(c + d*x)] +
 6*a^2*b*c*d^2*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] + 4*a^3*d^3*Log[a + b*
x]*Log[(a + b*x)/(c + d*x)] + 6*a*b^2*c^2*d*Log[(a + b*x)/(c + d*x)]^2 + 6*
b^3*c^2*d*x*Log[(a + b*x)/(c + d*x)]^2 - 3*b^3*c*d^2*x^2*Log[(a + b*x)/(c +
 d*x)]^2 + 2*b^3*d^3*x^3*Log[(a + b*x)/(c + d*x)]^2 - 12*b^3*c^3*Log[c + d*
x] + 18*a*b^2*c^2*d*Log[c + d*x] - 2*a^2*b*c*d^2*Log[c + d*x] - 4*a^3*d^3*L
og[c + d*x] + 6*a^2*b*c*d^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] + 4
*a^3*d^3*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)] - 22*b^3*c^3*Log[(d*(a
 + b*x))/(-(b*c) + a*d)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 12*a*b^2*c^2*d*Lo
g[(d*(a + b*x))/(-(b*c) + a*d)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 22*b^3*c^3
*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] - 12*a*b^2*c^2*d*L
og[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 6*b^3*c^3*Log[(a +
 b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - 11*b^3*c^3*Log[(b*c - a
*d)/(b*c + b*d*x)]^2 + 6*a*b^2*c^2*d*Log[(b*c - a*d)/(b*c + b*d*x)]^2 + 2*a
^2*d^2*(3*b*c + 2*a*d)*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] + 12*b^3*c^
3*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + 22*b^3
*c^3*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 12*a*b^2*c^2*d*PolyLog[2, (b*(
c + d*x))/(b*c - a*d)] - 12*b^3*c^3*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))]
)))/(6*d^4*i)
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2b^3g^3x^3 + 3\,A^2ab^2g^3x^2 + 3\,A^2a^2bg^3x + A^2a^3g^3 + \left(B^2b^3g^3x^3 + 3\,B^2ab^2g^3x^2 + 3\,B^2a^2bg^3x + B^2a^3g\right.}{dix + ci}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, a
lgorithm="fricas")
```

```
[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a
^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a
^3*g^3)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^3*g^3*x^3 + 3*A*B*a*b^2
*g^3*x^2 + 3*A*B*a^2*b*g^3*x + A*B*a^3*g^3)*log(e*((b*x + a)/(d*x + c))^n))
/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^3 \left(B \ln\left(e \left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2}{dix + ci}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)
```

```
[Out] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, a
lgorithm="maxima")
```

```
[Out] 3*A^2*a^2*b*g^3*(x/(d*i) - c*log(d*x + c)/(d^2*i)) - 1/6*A^2*b^3*g^3*(6*c^3
*log(d*x + c)/(d^4*i) - (2*d^2*x^3 - 3*c*d*x^2 + 6*c^2*x)/(d^3*i)) + 3/2*A^
2*a*b^2*g^3*(2*c^2*log(d*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A^2*a^
3*g^3*log(d*i*x + c*i)/(d*i) + 1/6*(2*B^2*b^3*d^3*g^3*x^3 - 3*(b^3*c*d^2*g^
3 - 3*a*b^2*d^3*g^3)*B^2*x^2 + 6*(b^3*c^2*d*g^3 - 3*a*b^2*c*d^2*g^3 + 3*a^2
*b*d^3*g^3)*B^2*x - 6*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3
- a^3*d^3*g^3)*B^2*log(d*x + c))*log((d*x + c)^n)^2/(d^4*i) - integrate(-1/
3*(3*B^2*a^3*d^3*g^3*log(e)^2 + 6*A*B*a^3*d^3*g^3*log(e) + 3*(B^2*b^3*d^3*g
^3*log(e)^2 + 2*A*B*b^3*d^3*g^3*log(e))*x^3 + 9*(B^2*a*b^2*d^3*g^3*log(e)^2
 + 2*A*B*a*b^2*d^3*g^3*log(e))*x^2 + 3*(B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d
^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*log((b*x + a)^n)^2 +
9*(B^2*a^2*b*d^3*g^3*log(e)^2 + 2*A*B*a^2*b*d^3*g^3*log(e))*x + 6*(B^2*a^3*
d^3*g^3*log(e) + A*B*a^3*d^3*g^3 + (B^2*b^3*d^3*g^3*log(e) + A*B*b^3*d^3*g^
3)*x^3 + 3*(B^2*a*b^2*d^3*g^3*log(e) + A*B*a*b^2*d^3*g^3)*x^2 + 3*(B^2*a^2*
b*d^3*g^3*log(e) + A*B*a^2*b*d^3*g^3)*x)*log((b*x + a)^n) - (6*B^2*a^3*d^3*
g^3*log(e) + 6*A*B*a^3*d^3*g^3 + 2*(3*A*B*b^3*d^3*g^3 + (g^3*n + 3*g^3*log(
e))*B^2*b^3*d^3)*x^3 - 6*(b^3*c^3*g^3*n - 3*a*b^2*c^2*d*g^3*n + 3*a^2*b*c*d
^2*g^3*n - a^3*d^3*g^3*n)*B^2*log(d*x + c) + 3*(6*A*B*a*b^2*d^3*g^3 - (b^3*
c*d^2*g^3*n - 3*(g^3*n + 2*g^3*log(e))*a*b^2*d^3)*B^2)*x^2 + 6*(3*A*B*a^2*b
*d^3*g^3 + (b^3*c^2*d*g^3*n - 3*a*b^2*c*d^2*g^3*n + 3*(g^3*n + g^3*log(e))*
a^2*b*d^3)*B^2)*x + 6*(B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^
2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*log((b*x + a)^n))*log((d*x + c)^n))/(d
^4*i*x + c*d^3*i), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^3\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^2}{c\,i+d\,i\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
),x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

3.187 $\int \frac{(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ci+dix}\,dx$

Optimal. Leaf size=573

$$\frac{b^2g^2(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2d^3i}-\frac{2Bg^2n(bc-ad)^2\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^3i}-\frac{g^2(bc-ad)^2\,\text{lo}}{}$$

```
[Out] -B*(-a*d+b*c)*g^2*n*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^2/i-2*(-a*d+b
*c)*g^2*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d^2/i+1/2*b^2*g^2*(d*x+c)
^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d^3/i-4*B*(-a*d+b*c)^2*g^2*n*(A+B*ln(e
*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/d^3/i-(-a*d+b*c)^2*g^2*(A+B
*ln(e*((b*x+a)/(d*x+c))^n))^2*ln((-a*d+b*c)/b/(d*x+c))/d^3/i+B^2*(-a*d+b*c)
^2*g^2*n^2*ln(d*x+c)/d^3/i+B*(-a*d+b*c)^2*g^2*n*(A+B*ln(e*((b*x+a)/(d*x+c))
^n))*ln(1-b*(d*x+c)/d/(b*x+a))/d^3/i-4*B^2*(-a*d+b*c)^2*g^2*n^2*polylog(2,d
*(b*x+a)/b/(d*x+c))/d^3/i-2*B*(-a*d+b*c)^2*g^2*n*(A+B*ln(e*((b*x+a)/(d*x+c)
)^n))*polylog(2,d*(b*x+a)/b/(d*x+c))/d^3/i-B^2*(-a*d+b*c)^2*g^2*n^2*polylog
(2,b*(d*x+c)/d/(b*x+a))/d^3/i+2*B^2*(-a*d+b*c)^2*g^2*n^2*polylog(3,d*(b*x+a
)/b/(d*x+c))/d^3/i
```

Rubi [B] time = 4.75, antiderivative size = 1780, normalized size of antiderivative = 3.11, number of steps used = 82, number of rules used = 27, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.600, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 6688, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x
),x]
```

```
[Out] -((A*b*B*(b*c - a*d)*g^2*n*x)/(d^2*i)) + (a*B^2*(b*c - a*d)*g^2*n^2*Log[a +
 b*x]^2)/(d^2*i) - (B^2*(b*c - a*d)*g^2*n*(a + b*x)*Log[e*((a + b*x)/(c + d
*x))^n])/(d^2*i) - (2*a*B*(b*c - a*d)*g^2*n*Log[a + b*x]*(A + B*Log[e*((a +
 b*x)/(c + d*x))^n]))/(d^2*i) - (b*(b*c - a*d)*g^2*x*(A + B*Log[e*((a + b*x
)/(c + d*x))^n])^2)/(d^2*i) + (g^2*(a + b*x)^2*(A + B*Log[e*((a + b*x)/(c +
 d*x))^n])^2)/(2*d*i) + (B^2*(b*c - a*d)^2*g^2*n^2*Log[c + d*x])/(d^3*i) -
(2*b*B^2*c*(b*c - a*d)*g^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*
x])/(d^3*i) - (B^2*(b*c - a*d)^2*g^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*
Log[c + d*x])/(d^3*i) + (2*b*B*c*(b*c - a*d)*g^2*n*(A + B*Log[e*((a + b*x)/
(c + d*x))^n])*Log[c + d*x])/(d^3*i) + (B*(b*c - a*d)^2*g^2*n*(A + B*Log[e*
((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(d^3*i) + (b*B^2*c*(b*c - a*d)*g^2*
n^2*Log[c + d*x]^2)/(d^3*i) + (B^2*(b*c - a*d)^2*g^2*n^2*Log[c + d*x]^2)/(2
*d^3*i) - (2*a*B^2*(b*c - a*d)*g^2*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c
- a*d)])/(d^2*i) + (B^2*(b*c - a*d)^2*g^2*Log[(a + b*x)^n]^2*Log[(b*(c + d*
x))/(b*c - a*d)])/(d^3*i) - (B^2*(b*c - a*d)^2*g^2*Log[(a + b*x)^n]^2*Log[i
*(c + d*x)])/(d^3*i) + (A*B*(b*c - a*d)^2*g^2*n*Log[i*(c + d*x)]^2)/(d^3*i)
 - (B^2*(b*c - a*d)^2*g^2*n^2*Log[a + b*x]*Log[i*(c + d*x)]^2)/(d^3*i) + (B
^2*(b*c - a*d)^2*g^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[i*(c + d*x)]
^2)/(d^3*i) + (B^2*(b*c - a*d)^2*g^2*n^2*Log[i*(c + d*x)]^3)/(3*d^3*i) - (2
*B^2*(b*c - a*d)^2*g^2*n*Log[a + b*x]*Log[i*(c + d*x)]*Log[(c + d*x)^(-n)])
/(d^3*i) - (B^2*(b*c - a*d)^2*g^2*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/(d^3*
i) + (B^2*(b*c - a*d)^2*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)
^(-n)]^2)/(d^3*i) - (2*A*B*(b*c - a*d)^2*g^2*n*Log[-((d*(a + b*x))/(b*c - a
*d))]*Log[c*i + d*i*x])/(d^3*i) + ((b*c - a*d)^2*g^2*(A + B*Log[e*((a + b*x
)/(c + d*x))^n])^2*Log[c*i + d*i*x])/(d^3*i) + (2*B^2*(b*c - a*d)^2*g^2*n*L
```

```
og[-((d*(a + b*x))/(b*c - a*d))]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c +
d*x))^n] + Log[(c + d*x)^(-n)])*Log[c*i + d*i*x])/(d^3*i) - (B^2*(b*c - a*d
)^2*g^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c*i + d*i*x]^2)/(d^3*i) +
 (B^2*(b*c - a*d)^2*g^2*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c*i + d*i*x]^2
)/(d^3*i) - (2*a*B^2*(b*c - a*d)*g^2*n^2*PolyLog[2, -((d*(a + b*x))/(b*c -
a*d))])/(d^2*i) + (2*B^2*(b*c - a*d)^2*g^2*n*Log[(a + b*x)^n]*PolyLog[2, -(
(d*(a + b*x))/(b*c - a*d))])/(d^3*i) - (2*A*B*(b*c - a*d)^2*g^2*n*PolyLog[2
, (b*(c + d*x))/(b*c - a*d)])/(d^3*i) - (2*b*B^2*c*(b*c - a*d)*g^2*n^2*Poly
Log[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i) - (B^2*(b*c - a*d)^2*g^2*n^2*Pol
yLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i) - (2*B^2*(b*c - a*d)^2*g^2*n*Lo
g[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i) + (2*B^2*(
b*c - a*d)^2*g^2*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log
[(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i) - (2*B^2*(
b*c - a*d)^2*g^2*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i) - (2
*B^2*(b*c - a*d)^2*g^2*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/(d^3*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
```

```
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
```

```
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
```

```
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^2 \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{187c+187dx}\,dx = \int\left(-\frac{b(bc-ad)g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{187d^2}+\frac{(bc-ad)^2g^2\left(A+B\right.}{d^2(187c+}\right.$$

$$=\frac{(bg)\int(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2dx}{187d}-\frac{\left(b(bc-ad)g^2\right)\int\left(\right.}{}$$

$$=-\frac{b(bc-ad)g^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{187d^2}+\frac{g^2(a+bx)^2\left(A+B\log\right.}{374d}$$

$$=-\frac{b(bc-ad)g^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{187d^2}+\frac{g^2(a+bx)^2\left(A+B\log\right.}{374d}$$

$$=-\frac{b(bc-ad)g^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{187d^2}+\frac{g^2(a+bx)^2\left(A+B\log\right.}{374d}$$

$$=-\frac{b(bc-ad)g^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{187d^2}+\frac{g^2(a+bx)^2\left(A+B\log\right.}{374d}$$

$$=-\frac{AbB(bc-ad)g^2nx}{187d^2}-\frac{2aB(bc-ad)g^2n\log(a+bx)\left(A+B\log\left(e\right.\right.}{187d^2}$$

$$=-\frac{AbB(bc-ad)g^2nx}{187d^2}-\frac{B^2(bc-ad)g^2n(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{187d^2}-\frac{2a}{}$$

$$=-\frac{AbB(bc-ad)g^2nx}{187d^2}-\frac{B^2(bc-ad)g^2n(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{187d^2}-\frac{2a}{}$$

$$=-\frac{AbB(bc-ad)g^2nx}{187d^2}-\frac{B^2(bc-ad)g^2n(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{187d^2}-\frac{2a}{}$$

$$=-\frac{AbB(bc-ad)g^2nx}{187d^2}+\frac{aB^2(bc-ad)g^2n^2\log^2(a+bx)}{187d^2}-\frac{B^2(bc-ad}{}$$

$$=-\frac{AbB(bc-ad)g^2nx}{187d^2}+\frac{aB^2(bc-ad)g^2n^2\log^2(a+bx)}{187d^2}-\frac{B^2(bc-ad}{}$$

$$=-\frac{AbB(bc-ad)g^2nx}{187d^2}+\frac{aB^2(bc-ad)g^2n^2\log^2(a+bx)}{187d^2}-\frac{B^2(bc-ad}{}$$

$$=-\frac{AbB(bc-ad)g^2nx}{187d^2}+\frac{aB^2(bc-ad)g^2n^2\log^2(a+bx)}{187d^2}-\frac{B^2(bc-ad}{}$$

$$=-\frac{AbB(bc-ad)g^2nx}{187d^2}+\frac{aB^2(bc-ad)g^2n^2\log^2(a+bx)}{187d^2}-\frac{B^2(bc-ad}{}$$

Mathematica [B] time = 1.65, size = 1741, normalized size = 3.04

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i +
 d*i*x),x]
```

```
[Out] (g^2*(-2*b*d*(b*c - 2*a*d)*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Lo
g[(a + b*x)/(c + d*x)])^2 + b^2*d^2*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^
n] - B*n*Log[(a + b*x)/(c + d*x)])^2 + 2*(b*c - a*d)^2*(A + B*Log[e*((a + b
*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2*Log[c + d*x] + 2*B*n*(A
 + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(-2*b^2
*c^2 + 2*a*b*c*d - b^2*c*d*x + a*b*d^2*x + 2*b^2*c^2*Log[c/d + x] - b^2*c^2
*Log[c/d + x]^2 - a^2*d^2*Log[a + b*x] - 2*b^2*c*d*x*Log[(a + b*x)/(c + d*x
)] + b^2*d^2*x^2*Log[(a + b*x)/(c + d*x)] + b^2*c^2*Log[c + d*x] + 2*b^2*c^
2*Log[c/d + x]*Log[c + d*x] + 2*b^2*c^2*Log[(a + b*x)/(c + d*x)]*Log[c + d*
x] - 2*b*c*Log[a/b + x]*(a*d + b*c*Log[c + d*x] - b*c*Log[(b*(c + d*x))/(b*
c - a*d)]) + 2*b^2*c^2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - 2*a^2*B*
d^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])
*(Log[c/d + x]^2 + 2*(Log[a/b + x] - Log[c/d + x] - Log[(a + b*x)/(c + d*x)
])*Log[c + d*x] - 2*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[
2, (d*(a + b*x))/(-(b*c) + a*d)])) - 4*a*B*d*n*(A + B*Log[e*((a + b*x)/(c +
 d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(-2*d*(a + b*x)*(-1 + Log[a/b + x
]) + 2*b*(c + d*x)*(-1 + Log[c/d + x]) - b*c*Log[c/d + x]^2 + 2*b*(Log[a/b
+ x] - Log[c/d + x] - Log[(a + b*x)/(c + d*x)])*(d*x - c*Log[c + d*x]) + 2*
b*c*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))
/(-(b*c) + a*d)])) + 4*a*B^2*d*n^2*(d*(a + b*x)*Log[(a + b*x)/(c + d*x)]^2
+ b*c*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - (b*c - a*
d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - 2
*Log[(a + b*x)/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2,
(b*(c + d*x))/(b*c - a*d)]) + 2*b*c*(Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d
*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])) + B^
2*n^2*(2*d*(-(b*c) + a*d)*(a + b*x)*Log[(a + b*x)/(c + d*x)] - 2*a^2*d^2*Lo
g[a + b*x]*Log[(a + b*x)/(c + d*x)] + b^2*d^2*x^2*Log[(a + b*x)/(c + d*x)]^
2 - 2*b*c*d*(a + b*x)*Log[(a + b*x)/(c + d*x)]^2 + 2*(b*c - a*d)^2*Log[c +
d*x] - 2*b^2*c^2*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] -
2*b^2*c^2*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + a^2*d
^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*Poly
Log[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b^2*c^2*(Log[(b*c - a*d)/(b*c + b*d
*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)])
 - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 2*b*c*(b*c - a*d)*(Log[(b*c -
 a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - 2*Log[(a + b*x)
/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/
(b*c - a*d)]) - 4*b^2*c^2*(Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x)
)/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])) - 2*a^2*B^2*d^
2*n^2*(Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*Log[(a
 + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - 2*PolyLog[3, (
d*(a + b*x))/(b*(c + d*x))])))/(2*d^3*i)
```

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2b^2g^2x^2 + 2\,A^2abg^2x + A^2a^2g^2 + \left(B^2b^2g^2x^2 + 2\,B^2abg^2x + B^2a^2g^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2 + 2\left(ABb^2g^2\right.}{dix + ci}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, a
lgorithm="fricas")
```

```
[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^
2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*
B*b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^
n))/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{2} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{dix+ci}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)
```

```
[Out] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,A^{2}abg^{2}\left(\frac{x}{di}-\frac{c\log\left(dx+c\right)}{d^{2}i}\right)+\frac{1}{2}\,A^{2}b^{2}g^{2}\left(\frac{2\,c^{2}\log\left(dx+c\right)}{d^{3}i}+\frac{dx^{2}-2\,cx}{d^{2}i}\right)+\frac{A^{2}a^{2}g^{2}\log\left(dix+ci\right)}{di}+\frac{\left(B^{2}b^{2}d^{2}g^{2}x^{2}-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, a
lgorithm="maxima")
```

```
[Out] 2*A^2*a*b*g^2*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + 1/2*A^2*b^2*g^2*(2*c^2*l
og(d*x + c)/(d^3*i) + (d*x^2 - 2*c*x)/(d^2*i)) + A^2*a^2*g^2*log(d*i*x + c*
i)/(d*i) + 1/2*(B^2*b^2*d^2*g^2*x^2 - 2*(b^2*c*d*g^2 - 2*a*b*d^2*g^2)*B^2*x
 + 2*(b^2*c^2*g^2 - 2*a*b*c*d*g^2 + a^2*d^2*g^2)*B^2*log(d*x + c))*log((d*x
 + c)^n)^2/(d^3*i) - integrate(-(B^2*a^2*d^2*g^2*log(e)^2 + 2*A*B*a^2*d^2*g
^2*log(e) + (B^2*b^2*d^2*g^2*log(e)^2 + 2*A*B*b^2*d^2*g^2*log(e))*x^2 + (B^
2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log((b*x + a)^n)
^2 + 2*(B^2*a*b*d^2*g^2*log(e)^2 + 2*A*B*a*b*d^2*g^2*log(e))*x + 2*(B^2*a^2
*d^2*g^2*log(e) + A*B*a^2*d^2*g^2 + (B^2*b^2*d^2*g^2*log(e) + A*B*b^2*d^2*g
^2)*x^2 + 2*(B^2*a*b*d^2*g^2*log(e) + A*B*a*b*d^2*g^2)*x)*log((b*x + a)^n)
- (2*B^2*a^2*d^2*g^2*log(e) + 2*A*B*a^2*d^2*g^2 + 2*(b^2*c^2*g^2*n - 2*a*b*
c*d*g^2*n + a^2*d^2*g^2*n)*B^2*log(d*x + c) + (2*A*B*b^2*d^2*g^2 + (g^2*n +
 2*g^2*log(e))*B^2*b^2*d^2)*x^2 + 2*(2*A*B*a*b*d^2*g^2 - (b^2*c*d*g^2*n - 2
*(g^2*n + g^2*log(e))*a*b*d^2)*B^2)*x + 2*(B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*
d^2*g^2*x + B^2*a^2*d^2*g^2)*log((b*x + a)^n))*log((d*x + c)^n))/(d^3*i*x +
 c*d^2*i), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^2\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^2}{c\,i+d\,i\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
),x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

3.188 $\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ci+dix}\,dx$

Optimal. Leaf size=303

$$\frac{2Bgn(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2i}+\frac{2Bgn(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2i}+\frac{g(bc-}{}$$

```
[Out] g*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d/i+2*B*(-a*d+b*c)*g*n*(A+B*ln(
e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+c))/d^2/i+(-a*d+b*c)*g*(A+B*ln
(e*((b*x+a)/(d*x+c))^n))^2*ln((-a*d+b*c)/b/(d*x+c))/d^2/i+2*B^2*(-a*d+b*c)*
g*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/d^2/i+2*B*(-a*d+b*c)*g*n*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))*polylog(2,d*(b*x+a)/b/(d*x+c))/d^2/i-2*B^2*(-a*d+b*c)*g*
n^2*polylog(3,d*(b*x+a)/b/(d*x+c))/d^2/i
```

Rubi [B] time = 4.03, antiderivative size = 1156, normalized size of antiderivative = 3.82, number of steps used = 65, number of rules used = 24, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.558, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$-\frac{B^2(bc-ad)gn^2\log^3(c+dx)}{3d^2i}-\frac{bB^2cgn^2\log^2(c+dx)}{d^2i}-\frac{AB(bc-ad)gn\log^2(c+dx)}{d^2i}+\frac{B^2(bc-ad)gn^2\log(a+bx)\log}{d^2i}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x),
x]
```

```
[Out] -((a*B^2*g*n^2*Log[a + b*x]^2)/(d*i)) + (2*a*B*g*n*Log[a + b*x]*(A + B*Log[
e*((a + b*x)/(c + d*x))^n]))/(d*i) + (b*g*x*(A + B*Log[e*((a + b*x)/(c + d*
x))^n])^2)/(d*i) + (2*A*B*(b*c - a*d)*g*n*Log[-((d*(a + b*x))/(b*c - a*d))]
*Log[c + d*x])/(d^2*i) + (2*b*B^2*c*g*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]
*Log[c + d*x])/(d^2*i) + (B^2*(b*c - a*d)*g*Log[(a + b*x)^n]^2*Log[c + d*x]
)/(d^2*i) - (2*b*B*c*g*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x
])/(d^2*i) - ((b*c - a*d)*g*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c
+ d*x])/(d^2*i) - (A*B*(b*c - a*d)*g*n*Log[c + d*x]^2)/(d^2*i) - (b*B^2*c*g
*n^2*Log[c + d*x]^2)/(d^2*i) + (B^2*(b*c - a*d)*g*n^2*Log[a + b*x]*Log[c +
d*x]^2)/(d^2*i) - (B^2*(b*c - a*d)*g*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c
 + d*x]^2)/(d^2*i) - (B^2*(b*c - a*d)*g*n^2*Log[c + d*x]^3)/(3*d^2*i) + (2*
a*B^2*g*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d*i) - (B^2*(b*c
- a*d)*g*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^2*i) + (2*B^
2*(b*c - a*d)*g*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)])/(d^2*i) +
(B^2*(b*c - a*d)*g*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/(d^2*i) - (B^2*(b*c
- a*d)*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-n)]^2)/(d^2*i) -
 (2*B^2*(b*c - a*d)*g*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]*(Log
[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)]))/(d^2
*i) + (2*a*B^2*g*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d*i) - (2*B
^2*(b*c - a*d)*g*n*Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))
])/(d^2*i) + (2*A*B*(b*c - a*d)*g*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/
(d^2*i) + (2*b*B^2*c*g*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i) +
 (2*B^2*(b*c - a*d)*g*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c -
 a*d)])/(d^2*i) - (2*B^2*(b*c - a*d)*g*n*(Log[(a + b*x)^n] - Log[e*((a + b*
x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d
)])/(d^2*i) + (2*B^2*(b*c - a*d)*g*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*
d))])/(d^2*i) + (2*B^2*(b*c - a*d)*g*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*
d)])/(d^2*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
```

```
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
```

```
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{188c+188dx}\,dx = \int \left(\frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{188d} + \frac{(-bc+ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right.\right.\right.}{188d(c+dx)}\right.$$

$$= \frac{(bg)\int\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\,dx}{188d} - \frac{((bc-ad)g)\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{c+dx}}{188d}$$

$$= \frac{bgx\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{188d} - \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{188d^2}$$

$$= \frac{bgx\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{188d} - \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{188d^2}$$

$$= \frac{bgx\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{188d} - \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{188d^2}$$

$$= \frac{bgx\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{188d} - \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{188d^2}$$

$$= \frac{aBgn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{94d} + \frac{bgx\left(A+B\log\left(e\left(\frac{a+b}{c+d}\right.\right.\right.}{188d}$$

$$= \frac{aBgn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{94d} + \frac{bgx\left(A+B\log\left(e\left(\frac{a+b}{c+d}\right.\right.\right.}{188d}$$

$$= \frac{aBgn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{94d} + \frac{bgx\left(A+B\log\left(e\left(\frac{a+b}{c+d}\right.\right.\right.}{188d}$$

$$= \frac{aBgn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{94d} + \frac{bgx\left(A+B\log\left(e\left(\frac{a+b}{c+d}\right.\right.\right.}{188d}$$

$$= -\frac{aB^2gn^2\log^2(a+bx)}{188d} + \frac{aBgn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{94d}$$

$$= -\frac{aB^2gn^2\log^2(a+bx)}{188d} + \frac{aBgn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{94d}$$

$$= -\frac{aB^2gn^2\log^2(a+bx)}{188d} + \frac{aBgn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{94d}$$

$$= -\frac{aB^2gn^2\log^2(a+bx)}{188d} + \frac{aBgn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{94d}$$

$$= -\frac{aB^2gn^2\log^2(a+bx)}{188d} + \frac{aBgn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{94d}$$

Mathematica [B] time = 0.70, size = 802, normalized size = 2.65

$$-\frac{g\Big(-B^2\Big(d(a+bx)\log^2\Big(\frac{a+bx}{c+dx}\Big)+bc\log\Big(\frac{bc-ad}{bc+bdx}\Big)\log^2\Big(\frac{a+bx}{c+dx}\Big)-(bc-ad)\Big(\log\Big(\frac{bc-ad}{bc+bdx}\Big)\Big(2\log\Big(\frac{d(a+bx)}{ad-bc}\Big)-2\log\Big(}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d
*i*x),x]
```

```
[Out] -((g*(-(b*d*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c
+ d*x)])^2) + (b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(
a + b*x)/(c + d*x)])^2*Log[c + d*x] + a*B*d*n*(A + B*Log[e*((a + b*x)/(c +
d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(Log[c/d + x]^2 + 2*(Log[a/b + x]
- Log[c/d + x] - Log[(a + b*x)/(c + d*x)])*Log[c + d*x] - 2*(Log[a/b + x]*L
og[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]))
+ B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])
*(-2*d*(a + b*x)*(-1 + Log[a/b + x]) + 2*b*(c + d*x)*(-1 + Log[c/d + x]) -
b*c*Log[c/d + x]^2 + 2*b*(Log[a/b + x] - Log[c/d + x] - Log[(a + b*x)/(c +
d*x)])*(d*x - c*Log[c + d*x]) + 2*b*c*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c
- a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])) - B^2*n^2*(d*(a + b*x)
*Log[(a + b*x)/(c + d*x)]^2 + b*c*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d
)/(b*c + b*d*x)] - (b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a
 + b*x))/(-(b*c) + a*d)] - 2*Log[(a + b*x)/(c + d*x)] + Log[(b*c - a*d)/(b*
c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]) + 2*b*c*(Log[(a + b
*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a +
 b*x))/(b*(c + d*x))])) + a*B^2*d*n^2*(Log[(a + b*x)/(c + d*x)]^2*Log[(b*c
- a*d)/(b*c + b*d*x)] + 2*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))
/(b*(c + d*x))] - 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])))/(d^2*i))
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2bgx+A^2ag+\left(B^2bgx+B^2ag\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2+2\left(ABbgx+ABag\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{dix+ci},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, alg
orithm="fricas")
```

```
[Out] integral((A^2*b*g*x + A^2*a*g + (B^2*b*g*x + B^2*a*g)*log(e*((b*x + a)/(d*x
 + c))^n)^2 + 2*(A*B*b*g*x + A*B*a*g)*log(e*((b*x + a)/(d*x + c))^n))/(d*i*
x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, alg
orithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(bgx+ag)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{dix+ci}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)
```

```
[Out] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2bg\left(\frac{x}{di} - \frac{c\log(dx+c)}{d^2i}\right) + \frac{A^2ag\log(dix+ci)}{di} + \frac{\left(B^2bdgx - \left(bcg - adg\right)B^2\log(dx+c)\right)\log\left((dx+c)^n\right)^2}{d^2i} - \int -\frac{B^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, alg
orithm="maxima")
```

```
[Out] A^2*b*g*(x/(d*i) - c*log(d*x + c)/(d^2*i)) + A^2*a*g*log(d*i*x + c*i)/(d*i)
 + (B^2*b*d*g*x - (b*c*g - a*d*g)*B^2*log(d*x + c))*log((d*x + c)^n)^2/(d^2
*i) - integrate(-(B^2*a*d*g*log(e)^2 + 2*A*B*a*d*g*log(e) + (B^2*b*d*g*x +
B^2*a*d*g)*log((b*x + a)^n)^2 + (B^2*b*d*g*log(e)^2 + 2*A*B*b*d*g*log(e))*x
 + 2*(B^2*a*d*g*log(e) + A*B*a*d*g + (B^2*b*d*g*log(e) + A*B*b*d*g)*x)*log(
(b*x + a)^n) - 2*(B^2*a*d*g*log(e) + A*B*a*d*g - (b*c*g*n - a*d*g*n)*B^2*lo
g(d*x + c) + ((g*n + g*log(e))*B^2*b*d + A*B*b*d*g)*x + (B^2*b*d*g*x + B^2*
a*d*g)*log((b*x + a)^n))*log((d*x + c)^n))/(d^2*i*x + c*d*i), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^2}{c\,i+d\,i\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x),
x)
```

```
[Out] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x),
 x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{g\left(\int \frac{A^2a}{c+dx}\,dx + \int \frac{A^2bx}{c+dx}\,dx + \int \frac{B^2a\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)^2}{c+dx}\,dx + \int \frac{2ABa\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)}{c+dx}\,dx + \int \frac{B^2bx\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)^2}{c+dx}\,dx + \right.}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i),x)
```

```
[Out] g*(Integral(A**2*a/(c + d*x), x) + Integral(A**2*b*x/(c + d*x), x) + Integr
al(B**2*a*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(c + d*x), x) + Integr
al(2*A*B*a*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(c + d*x), x) + Integral
(B**2*b*x*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(c + d*x), x) + Integr
al(2*A*B*b*x*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(c + d*x), x))/i
```

3.189 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{ci+dix}\,dx$

Optimal. Leaf size=137

$$-\frac{2Bn\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{di}-\frac{\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{di}+\frac{2B^2n^2\text{Li}_3\left(\frac{d(a+bx)}{b(c+dx)}\right)}{di}$$

```
[Out] -(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2*ln((-a*d+b*c)/b/(d*x+c))/d/i-2*B*n*(A+B*
ln(e*((b*x+a)/(d*x+c))^n))*polylog(2,d*(b*x+a)/b/(d*x+c))/d/i+2*B^2*n^2*pol
ylog(3,d*(b*x+a)/b/(d*x+c))/d/i
```

Rubi [B] time = 3.17, antiderivative size = 782, normalized size of antiderivative = 5.71, number of steps used = 45, number of rules used = 23, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.657, Rules used = {2524, 2528, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 12, 6742, 2499, 2396, 2433, 2374, 6589, 2302, 30, 2500, 2375, 2317, 2440, 2434}

$$-\frac{2ABn\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{di}+\frac{2B^2n\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)\left(-\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+\log\left((a+bx)^n\right)+\log\left((c+dx)^{-n}\right)\right)}{di}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x),x]
```

```
[Out] (B^2*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d*i) - (B^2*Log[(a
 + b*x)^n]^2*Log[i*(c + d*x)])/(d*i) + (A*B*n*Log[i*(c + d*x)]^2)/(d*i) - (
B^2*n^2*Log[a + b*x]*Log[i*(c + d*x)]^2)/(d*i) + (B^2*n^2*Log[-((d*(a + b*x
))/(b*c - a*d))]*Log[i*(c + d*x)]^2)/(d*i) + (B^2*n^2*Log[i*(c + d*x)]^3)/(
3*d*i) - (2*B^2*n*Log[a + b*x]*Log[i*(c + d*x)]*Log[(c + d*x)^(-n)])/(d*i)
- (B^2*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/(d*i) + (B^2*Log[-((d*(a + b*x))
/(b*c - a*d))]*Log[(c + d*x)^(-n)]^2)/(d*i) - (2*A*B*n*Log[-((d*(a + b*x))/
(b*c - a*d))]*Log[c*i + d*i*x])/(d*i) + ((A + B*Log[e*((a + b*x)/(c + d*x))
^n])^2*Log[c*i + d*i*x])/(d*i) + (2*B^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]
*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*
Log[c*i + d*i*x])/(d*i) - (B^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c*
i + d*i*x]^2)/(d*i) + (B^2*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c*i + d*i*x
]^2)/(d*i) + (2*B^2*n*Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*
d))])/(d*i) - (2*A*B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d*i) - (2*B^
2*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d*i) + (2*B
^2*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n
)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d*i) - (2*B^2*n^2*PolyLog[3, -(
(d*(a + b*x))/(b*c - a*d))])/(d*i) - (2*B^2*n^2*PolyLog[3, (b*(c + d*x))/(b
*c - a*d)])/(d*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{189c+189dx}\,dx = \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(189c+189dx)}{189d} - \frac{(2Bn)\int \frac{(c+dx)\left(-\frac{d(a+bx)}{(c+dx)^2}+\frac{b}{c+dx}\right)\left(A \cdots\right.}{\cdots}}{1\cdots}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(189c+189dx)}{189d} - \frac{(2Bn)\int \frac{(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)\cdots\right.\right.}{(a+bx)(c\cdots}}{189d}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(189c+189dx)}{189d} - \frac{(2B(bc-ad)n)\int \frac{\left(A+B\log\left(e\left(\frac{a\cdots}{c\cdots}\right.\right.\right.}{(\cdots}}{189d}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(189c+189dx)}{189d} - \frac{(2B(bc-ad)n)\int \left(\frac{d\left(-A-B\log\left(\cdots\right.\right.}{\cdots}\right.}{\cdots}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(189c+189dx)}{189d} - \frac{1}{189}(2Bn)\int \frac{\left(-A-B\log\left(e\cdots\right.\right.}{\cdots}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(189c+189dx)}{189d} - \frac{1}{189}(2Bn)\int \left(\frac{A\log(189c+\cdots}{-c-dx\cdots}\right.$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(189c+189dx)}{189d} - \frac{1}{189}(2ABn)\int \frac{\log(189c+1\cdots}{-c-dx\cdots}$$

$$= -\frac{2ABn\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(189c+189dx)}{189d} + \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(1\cdots}{189d}$$

$$= -\frac{2ABn\log\left(-\frac{d(a+bx)}{bc-ad}\right)\log(189c+189dx)}{189d} + \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(1\cdots}{189d}$$

$$= -\frac{B^2\log^2\left((a+bx)^n\right)\log(189(c+dx))}{189d} + \frac{ABn\log^2(189(c+dx))}{189d} - \frac{2B^2n\log\cdots}{\cdots}$$

$$= -\frac{B^2\log^2\left((a+bx)^n\right)\log(189(c+dx))}{189d} + \frac{ABn\log^2(189(c+dx))}{189d} + \frac{B^2\log^2(\cdots}{\cdots}$$

$$= -\frac{B^2\log^2\left((a+bx)^n\right)\log(189(c+dx))}{189d} + \frac{ABn\log^2(189(c+dx))}{189d} - \frac{B^2n^2\log\cdots}{\cdots}$$

$$= -\frac{B^2\log^2\left((a+bx)^n\right)\log(189(c+dx))}{189d} + \frac{ABn\log^2(189(c+dx))}{189d} - \frac{B^2n^2\log\cdots}{\cdots}$$

$$= -\frac{B^2\log^2\left((a+bx)^n\right)\log(189(c+dx))}{189d} + \frac{ABn\log^2(189(c+dx))}{189d} - \frac{B^2n^2\log\cdots}{\cdots}$$

$$= -\frac{B^2\log^2\left((a+bx)^n\right)\log(189(c+dx))}{189d} + \frac{ABn\log^2(189(c+dx))}{189d} - \frac{B^2n^2\log\cdots}{\cdots}$$

Mathematica [B] time = 0.28, size = 306, normalized size = 2.23

$$-Bn\left(-2\left(\text{Li}_2\left(\frac{d(a+bx)}{ad-bc}\right)+\log\left(\frac{a}{b}+x\right)\log\left(\frac{b(c+dx)}{bc-ad}\right)\right)+2\log(c+dx)\left(-\log\left(\frac{a+bx}{c+dx}\right)+\log\left(\frac{a}{b}+x\right)-\log\left(\frac{c}{d}+x\right)\right)+1$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x),x]
```

```
[Out] ((A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2*Lo
g[c + d*x] - B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/
(c + d*x)])*(Log[c/d + x]^2 + 2*(Log[a/b + x] - Log[c/d + x] - Log[(a + b*x
)/(c + d*x)])*Log[c + d*x] - 2*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)]
 + PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])) - B^2*n^2*(Log[(a + b*x)/(c +
 d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*Log[(a + b*x)/(c + d*x)]*PolyLo
g[2, (d*(a + b*x))/(b*(c + d*x))] - 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x)
)]))/(d*i)
```

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{B^2\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2+2\,AB\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A^2}{dix+ci},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="fric
as")
```

```
[Out] integral((B^2*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*A*B*log(e*((b*x + a)/(d*
x + c))^n) + A^2)/(d*i*x + c*i), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="giac
")
```

```
[Out] Timed out
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int\frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{dix+ci}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{B^2\log(dx+c)\log\left((dx+c)^n\right)^2}{di}+\frac{A^2\log(dix+ci)}{di}-\int-\frac{B^2\log\left((bx+a)^n\right)^2+B^2\log(e)^2+2\,AB\log(e)+2\left(B^2\text{lo}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i),x, algorithm="maxi
ma")
```

```
[Out] B^2*log(d*x + c)*log((d*x + c)^n)^2/(d*i) + A^2*log(d*i*x + c*i)/(d*i) - in
tegrate(-(B^2*log((b*x + a)^n)^2 + B^2*log(e)^2 + 2*A*B*log(e) + 2*(B^2*log
(e) + A*B)*log((b*x + a)^n) - 2*(B^2*n*log(d*x + c) + B^2*log((b*x + a)^n)
+ B^2*log(e) + A*B)*log((d*x + c)^n))/(d*i*x + c*i), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)^2}{c\,i+d\,i\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/(c*i + d*i*x),x)
```

```
[Out] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/(c*i + d*i*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A^2}{c+dx}\, dx + \int \frac{B^2 \log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)^2}{c+dx}\, dx + \int \frac{2AB \log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)}{c+dx}\, dx}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i),x)
```

```
[Out] (Integral(A**2/(c + d*x), x) + Integral(B**2*log(e*(a/(c + d*x) + b*x/(c +
d*x))**n)**2/(c + d*x), x) + Integral(2*A*B*log(e*(a/(c + d*x) + b*x/(c + d
*x))**n)/(c + d*x), x))/i
```

3.190 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)(ci+dix)}\,dx$

Optimal. Leaf size=50

$$\frac{\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^3}{3Bgin(bc-ad)}$$

```
[Out] 1/3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)/g/i/n
```

Rubi [C] time = 5.32, antiderivative size = 1237, normalized size of antiderivative = 24.74, number of steps used = 59, number of rules used = 29, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.644, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 12, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$-\frac{B^2n^2\log^3(c+dx)}{3(bc-ad)gi}-\frac{ABn\log^2(c+dx)}{(bc-ad)gi}+\frac{B^2n^2\log(a+bx)\log^2(c+dx)}{(bc-ad)gi}-\frac{B^2n\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\log^2(c+dx)}{(bc-ad)gi}+\frac{B^2\log}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*i*x)),
x]
```

```
[Out] -((A*B*n*Log[a + b*x]^2)/((b*c - a*d)*g*i)) - (B^2*Log[-((b*c - a*d)/(d*(a
+ b*x)))]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)*g*i) - (B^2*Log[a
+ b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)*g*i) + (Log[a + b*x]*
(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)*g*i) + (2*A*B*n*Log[
-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)*g*i) + (B^2*Log[(a
 + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)*g*i) - ((A + B*Log[e*((a + b*x)/(c
+ d*x))^n])^2*Log[c + d*x])/((b*c - a*d)*g*i) - (A*B*n*Log[c + d*x]^2)/((b*
c - a*d)*g*i) + (B^2*n^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)*g*i) - (
B^2*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2)/((b*c - a*d)*g*i) - (B
^2*n^2*Log[c + d*x]^3)/(3*(b*c - a*d)*g*i) + (2*A*B*n*Log[a + b*x]*Log[(b*(
c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) - (B^2*Log[(a + b*x)^n]^2*Log[(b*
(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (2*B^2*n*Log[a + b*x]*Log[c +
d*x]*Log[(c + d*x)^(-n)])/((b*c - a*d)*g*i) + (B^2*Log[a + b*x]*Log[(c + d*
x)^(-n)]^2)/((b*c - a*d)*g*i) - (B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[
(c + d*x)^(-n)]^2)/((b*c - a*d)*g*i) - (2*B^2*n*Log[-((d*(a + b*x))/(b*c -
a*d))]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Lo
g[(c + d*x)^(-n)]))/((b*c - a*d)*g*i) + (2*A*B*n*PolyLog[2, -((d*(a + b*x))
/(b*c - a*d))])/((b*c - a*d)*g*i) - (2*B^2*n*Log[(a + b*x)^n]*PolyLog[2, -(
(d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)*g*i) + (2*A*B*n*PolyLog[2, (b*(c
+ d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (2*B^2*n*Log[(c + d*x)^(-n)]*Poly
Log[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) - (2*B^2*n*(Log[(a + b
*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (
b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (2*B^2*n*Log[e*((a + b*x)/(c
 + d*x))^n]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)*g*i) +
(2*B^2*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)*g*i) + (2
*B^2*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*g*i) + (2*B^2*
n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)*g*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
```

```
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
```

```
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(190c+190dx)(ag+bgx)}\,dx=\int\left(\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc-ad)g(a+bx)}-\frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc-ad)g(c+dx)}\right)dx$$

$$=\frac{b\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}\,dx}{190(bc-ad)g}-\frac{d\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}\,dx}{190(bc-ad)g}$$

$$=\frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc-ad)g}-\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(c+d}{190(bc-ad)g}$$

$$=\frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc-ad)g}-\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(c+d}{190(bc-ad)g}$$

$$=\frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc-ad)g}-\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(c+d}{190(bc-ad)g}$$

$$=\frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc-ad)g}-\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(c+d}{190(bc-ad)g}$$

$$=\frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc-ad)g}-\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\log(c+d}{190(bc-ad)g}$$

$$=-\frac{B^2\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc-ad)g}+\frac{\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{190(bc-ad)g}-$$

$$=-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc-ad)g}-\frac{B^2\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc-ad)g}+\frac{\log}{}$$

$$=-\frac{ABn\log^2(a+bx)}{190(bc-ad)g}-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc-ad)g}-\frac{B^2\log(a+bx)\,\mathrm{l}}{190(bc}$$

$$=-\frac{ABn\log^2(a+bx)}{190(bc-ad)g}-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc-ad)g}-\frac{B^2\log(a+bx)\,\mathrm{l}}{190(bc}$$

$$=-\frac{ABn\log^2(a+bx)}{190(bc-ad)g}-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc-ad)g}-\frac{B^2\log(a+bx)\,\mathrm{l}}{190(bc}$$

$$=-\frac{ABn\log^2(a+bx)}{190(bc-ad)g}-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc-ad)g}-\frac{B^2\log(a+bx)\,\mathrm{l}}{190(bc}$$

$$=-\frac{ABn\log^2(a+bx)}{190(bc-ad)g}-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{190(bc-ad)g}-\frac{B^2\log(a+bx)\,\mathrm{l}}{190(bc}$$

$$=-\frac{ABn\log^2(a+bx)}{}-\frac{B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{}-\frac{B^2\log(a+bx)\,\mathrm{l}}{}$$

Mathematica [A] time = 0.39, size = 90, normalized size = 1.80

$$\frac{3A^2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+3AB\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+B^2\log^3\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{3bcgin-3adgin}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*
i*x)),x]
```

```
[Out] (3*A^2*Log[e*((a + b*x)/(c + d*x))^n] + 3*A*B*Log[e*((a + b*x)/(c + d*x))^n
]^2 + B^2*Log[e*((a + b*x)/(c + d*x))^n]^3)/(3*b*c*g*i*n - 3*a*d*g*i*n)
```

fricas [B] time = 0.92, size = 149, normalized size = 2.98

$$\frac{B^2n^2\log\left(\frac{bx+a}{dx+c}\right)^3+3\,B^2\log(e)^2\log\left(\frac{bx+a}{dx+c}\right)+3\,ABn\log\left(\frac{bx+a}{dx+c}\right)^2+3\,A^2\log\left(\frac{bx+a}{dx+c}\right)+3\left(B^2n\log\left(\frac{bx+a}{dx+c}\right)^2+2\,AB\log\right.}{3\,(bc-ad)gi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i),x, alg
orithm="fricas")
```

```
[Out] 1/3*(B^2*n^2*log((b*x + a)/(d*x + c))^3 + 3*B^2*log(e)^2*log((b*x + a)/(d*x
 + c)) + 3*A*B*n*log((b*x + a)/(d*x + c))^2 + 3*A^2*log((b*x + a)/(d*x + c)
) + 3*(B^2*n*log((b*x + a)/(d*x + c))^2 + 2*A*B*log((b*x + a)/(d*x + c)))*l
og(e))/((b*c - a*d)*g*i)
```

giac [B] time = 1.66, size = 162, normalized size = 3.24

$$-\frac{\left(B^2in^2\log\left(\frac{bx+a}{dx+c}\right)^3+3\,ABin\log\left(\frac{bx+a}{dx+c}\right)^2+3\,B^2in\log\left(\frac{bx+a}{dx+c}\right)^2+3\,A^2i\log\left(\frac{bx+a}{dx+c}\right)+6\,ABi\log\left(\frac{bx+a}{dx+c}\right)+3\,B^2i\log\right.}{3\,g}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i),x, alg
orithm="giac")
```

```
[Out] -1/3*(B^2*i*n^2*log((b*x + a)/(d*x + c))^3 + 3*A*B*i*n*log((b*x + a)/(d*x +
 c))^2 + 3*B^2*i*n*log((b*x + a)/(d*x + c))^2 + 3*A^2*i*log((b*x + a)/(d*x
+ c)) + 6*A*B*i*log((b*x + a)/(d*x + c)) + 3*B^2*i*log((b*x + a)/(d*x + c))
)*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)/g
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int\frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{\left(bgx+ag\right)\left(dix+ci\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i),x)
```

maxima [B] time = 1.19, size = 407, normalized size = 8.14

$$B^2\left(\frac{\log(bx+a)}{(bc-ad)gi}-\frac{\log(dx+c)}{(bc-ad)gi}\right)\log\left(e\left(\frac{bx}{dx+c}+\frac{a}{dx+c}\right)^n\right)^2+2\,AB\left(\frac{\log(bx+a)}{(bc-ad)gi}-\frac{\log(dx+c)}{(bc-ad)gi}\right)\log\left(e\left(\frac{bx}{dx+c}+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i),x, alg
orithm="maxima")
```

```
[Out] B^2*(log(b*x + a)/((b*c - a*d)*g*i) - log(d*x + c)/((b*c - a*d)*g*i))*log(e
*(b*x/(d*x + c) + a/(d*x + c))^n)^2 + 2*A*B*(log(b*x + a)/((b*c - a*d)*g*i)
 - log(d*x + c)/((b*c - a*d)*g*i))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) +
 1/3*((log(b*x + a)^3 - 3*log(b*x + a)^2*log(d*x + c) + 3*log(b*x + a)*log(
d*x + c)^2 - log(d*x + c)^3)*n^2/(b*c*g*i - a*d*g*i) - 3*(log(b*x + a)^2 -
2*log(b*x + a)*log(d*x + c) + log(d*x + c)^2)*n*log(e*(b*x/(d*x + c) + a/(d
*x + c))^n)/(b*c*g*i - a*d*g*i))*B^2 - (log(b*x + a)^2 - 2*log(b*x + a)*log
(d*x + c) + log(d*x + c)^2)*A*B*n/(b*c*g*i - a*d*g*i) + A^2*(log(b*x + a)/(
(b*c - a*d)*g*i) - log(d*x + c)/((b*c - a*d)*g*i))
```

mupad [B] time = 5.68, size = 122, normalized size = 2.44

$$-\frac{\frac{B^2\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^3}{3}+A\,B\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2}{g\,i\,n\,\left(a\,d-b\,c\right)}+\frac{A^2\,\mathrm{atan}\left(\frac{a\,d\,1\mathrm{i}+b\,c\,1\mathrm{i}+b\,d\,x\,2\mathrm{i}}{a\,d-b\,c}\right)\,2\mathrm{i}}{g\,i\,\left(a\,d-b\,c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)*(c*i + d*i*x)),
x)
```

```
[Out] (A^2*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(g*i*(a*d - b*c)) -
 ((B^2*log(e*((a + b*x)/(c + d*x))^n)^3)/3 + A*B*log(e*((a + b*x)/(c + d*x)
)^n)^2)/(g*i*n*(a*d - b*c))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int\frac{A^2}{ac+adx+bcx+bdx^2}\,dx+\int\frac{B^2\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)^2}{ac+adx+bcx+bdx^2}\,dx+\int\frac{2AB\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)}{ac+adx+bcx+bdx^2}\,dx}{gi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)/(d*i*x+c*i),x)
```

```
[Out] (Integral(A**2/(a*c + a*d*x + b*c*x + b*d*x**2), x) + Integral(B**2*log(e*(
a/(c + d*x) + b*x/(c + d*x))**n)**2/(a*c + a*d*x + b*c*x + b*d*x**2), x) +
Integral(2*A*B*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(a*c + a*d*x + b*c*x
 + b*d*x**2), x))/(g*i)
```

3.191 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2(ci+dix)}\,dx$

Optimal. Leaf size=199

$$-\frac{d\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^3}{3Bg^2in(bc-ad)^2}-\frac{b(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{g^2i(a+bx)(bc-ad)^2}-\frac{2bBn(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i(a+bx)(bc-ad)^2}-\frac{2bB}{g^2i(a+}$$

```
[Out] -2*b*B^2*n^2*(d*x+c)/(-a*d+b*c)^2/g^2/i/(b*x+a)-2*b*B*n*(d*x+c)*(A+B*ln(e*(
(b*x+a)/(d*x+c))^n))/(-a*d+b*c)^2/g^2/i/(b*x+a)-b*(d*x+c)*(A+B*ln(e*((b*x+a
)/(d*x+c))^n))^2/(-a*d+b*c)^2/g^2/i/(b*x+a)-1/3*d*(A+B*ln(e*((b*x+a)/(d*x+c
))^n))^3/B/(-a*d+b*c)^2/g^2/i/n
```

Rubi [C] time = 6.09, antiderivative size = 1800, normalized size of antiderivative = 9.05, number of steps used = 83, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.689, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i + d*i*x)
),x]
```

```
[Out] (-2*B^2*n^2)/((b*c - a*d)*g^2*i*(a + b*x)) - (2*B^2*d*n^2*Log[a + b*x])/((b
*c - a*d)^2*g^2*i) + (A*B*d*n*Log[a + b*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*
d*n^2*Log[a + b*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[-((b*c - a*d)/(d*(
a + b*x)))]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^2*g^2*i) + (B^2*
d*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^2*g^2*i) - (2
*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)*g^2*i*(a + b*x))
- (2*B*d*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d
)^2*g^2*i) - (A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((b*c - a*d)*g^2*i*(a
 + b*x)) - (d*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c
- a*d)^2*g^2*i) + (2*B^2*d*n^2*Log[c + d*x])/((b*c - a*d)^2*g^2*i) - (2*A*B
*d*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^2*g^2*i)
- (2*B^2*d*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)
^2*g^2*i) - (B^2*d*Log[(a + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)^2*g^2*i) +
 (2*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)
^2*g^2*i) + (d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/((b*c
 - a*d)^2*g^2*i) + (A*B*d*n*Log[c + d*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*
n^2*Log[c + d*x]^2)/((b*c - a*d)^2*g^2*i) - (B^2*d*n^2*Log[a + b*x]*Log[c +
 d*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*n*Log[e*((a + b*x)/(c + d*x))^n]*Lo
g[c + d*x]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*n^2*Log[c + d*x]^3)/(3*(b*c -
a*d)^2*g^2*i) - (2*A*B*d*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b
*c - a*d)^2*g^2*i) - (2*B^2*d*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d
)])/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*
c - a*d)])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*n*Log[a + b*x]*Log[c + d*x]*Log
[(c + d*x)^(-n)])/((b*c - a*d)^2*g^2*i) - (B^2*d*Log[a + b*x]*Log[(c + d*x)
^(-n)]^2)/((b*c - a*d)^2*g^2*i) + (B^2*d*Log[-((d*(a + b*x))/(b*c - a*d))]*
Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^2*g^2*i) + (2*B^2*d*n*Log[-((d*(a + b*x
))/(b*c - a*d))]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x
))^n] + Log[(c + d*x)^(-n)]))/((b*c - a*d)^2*g^2*i) - (2*A*B*d*n*PolyLog[2,
 -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*n^2*PolyLo
g[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g^2*i) + (2*B^2*d*n*Log[
(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g^2*i
```

```
) - (2*A*B*d*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i)
 - (2*B^2*d*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i
) - (2*B^2*d*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(
(b*c - a*d)^2*g^2*i) + (2*B^2*d*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c +
 d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b
*c - a*d)^2*g^2*i) - (2*B^2*d*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1
 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*n^2*PolyLog
[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*n^2*Pol
yLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g^2*i) - (2*B^2*d*n^2*Po
lyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^2*g^2*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
```

```
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
```

```
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(191c+191dx)(ag+bgx)^2}\,dx = \int \left(\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc-ad)g^2(a+bx)^2} - \frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc-ad)^2g^2(a+bx)} + \frac{d^2\left(A+B\log \cdots\right.}{191(bc-a \cdots} \cdots\right.$$

$$= -\frac{(bd)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}\,dx}{191(bc-ad)^2g^2} + \frac{d^2\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}\,dx}{191(bc-ad)^2g^2} + \frac{b\int \frac{\left(A+B\log\left(e\left(\frac{a+ \cdots}{c+ \cdots}\right.\right.\right.}{(a+bx)^2}}{191(bc-a \cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc-ad)^2g^2} + \frac{d\left(A \cdots\right.}{\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc-ad)^2g^2} + \frac{d\left(A \cdots\right.}{\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc-ad)^2g^2} + \frac{d\left(A \cdots\right.}{\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc-ad)g^2(a+bx)} - \frac{d\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{191(bc-ad)^2g^2} + \frac{d\left(A \cdots\right.}{\cdots}$$

$$= -\frac{2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{191(bc-ad)g^2(a+bx)} - \frac{2Bdn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{191(bc-ad)^2g^2} - \cdots$$

$$= \frac{B^2d\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{191(bc-ad)^2g^2} - \frac{2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{191(bc-ad)g^2(a+bx)} - \frac{2Bdn\log(\cdots}{\cdots}$$

$$= \frac{B^2d\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{191(bc-ad)^2g^2} + \frac{B^2d\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{191(bc-ad)^2g^2} - \frac{2B \cdots}{1 \cdots}$$

$$= -\frac{2B^2n^2}{191(bc-ad)g^2(a+bx)} - \frac{2B^2dn^2\log(a+bx)}{191(bc-ad)^2g^2} + \frac{ABdn\log^2(a+bx)}{191(bc-ad)^2g^2} + \frac{B^2d \cdots}{\cdots}$$

$$= -\frac{2B^2n^2}{191(bc-ad)g^2(a+bx)} - \frac{2B^2dn^2\log(a+bx)}{191(bc-ad)^2g^2} + \frac{ABdn\log^2(a+bx)}{191(bc-ad)^2g^2} + \frac{B^2dn \cdots}{191 \cdots}$$

$$= -\frac{2B^2n^2}{191(bc-ad)g^2(a+bx)} - \frac{2B^2dn^2\log(a+bx)}{191(bc-ad)^2g^2} + \frac{ABdn\log^2(a+bx)}{191(bc-ad)^2g^2} + \frac{B^2dn \cdots}{191 \cdots}$$

$$= -\frac{2B^2n^2}{191(bc-ad)g^2(a+bx)} - \frac{2B^2dn^2\log(a+bx)}{191(bc-ad)^2g^2} + \frac{ABdn\log^2(a+bx)}{191(bc-ad)^2g^2} + \frac{B^2dn \cdots}{191 \cdots}$$

$$= -\frac{2B^2n^2}{191(bc-ad)g^2(a+bx)} - \frac{2B^2dn^2\log(a+bx)}{191(bc-ad)^2g^2} + \frac{ABdn\log^2(a+bx)}{191(bc-ad)^2g^2} + \frac{B^2dn \cdots}{191 \cdots}$$

Mathematica [B] time = 0.83, size = 793, normalized size = 3.98

$$\frac{-2AB\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)-n\log\left(\frac{a+bx}{c+dx}\right)\right)-B^2\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)-n\log\left(\frac{a+bx}{c+dx}\right)\right)^2-2B^2n\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)-n\log\right.}{g^2i(a+bx)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i + 
d*i*x)),x]
```

```
[Out] -1/3*(B^2*d*n^2*Log[(a + b*x)/(c + d*x)]^3)/((b*c - a*d)^2*g^2*i) + (2*B*n*
Log[(a + b*x)/(c + d*x)]*(A + B*n + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*L
og[(a + b*x)/(c + d*x)])))/((-(b*c) + a*d)*g^2*i*(a + b*x)) + (Log[(a + b*x
)/(c + d*x)]^2*(-(a*A*B*d*n) - b*B^2*c*n^2 - A*b*B*d*n*x - b*B^2*d*n^2*x - 
a*B^2*d*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) - b
*B^2*d*n*x*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])))/
((-(b*c) + a*d)^2*g^2*i*(a + b*x)) + (-A^2 - 2*A*B*n - 2*B^2*n^2 - 2*A*B*(L
og[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) - 2*B^2*n*(Log[
e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) - B^2*(Log[e*((a +
 b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)/((b*c - a*d)*g^2*i*(a 
+ b*x)) - (d*Log[a + b*x]*(A^2 + 2*A*B*n + 2*B^2*n^2 + 2*A*B*(Log[e*((a + b
*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) + 2*B^2*n*(Log[e*((a + b*x)
/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) + B^2*(Log[e*((a + b*x)/(c + d
*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2))/((b*c - a*d)^2*g^2*i) + (d*(A^2 +
 2*A*B*n + 2*B^2*n^2 + 2*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b
*x)/(c + d*x)]) + 2*B^2*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)
/(c + d*x)]) + B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d
*x)])^2)*Log[c + d*x])/((b*c - a*d)^2*g^2*i)
```

fricas [B] time = 0.96, size = 428, normalized size = 2.15

$$-\frac{3\,A^2bc-3\,A^2ad+\left(B^2bdn^2x+B^2adn^2\right)\log\left(\frac{bx+a}{dx+c}\right)^3+6\left(B^2bc-B^2ad\right)n^2+3\left(B^2bc-B^2ad+\left(B^2bdx+B^2ad\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i),x, a
lgorithm="fricas")
```

```
[Out] -1/3*(3*A^2*b*c - 3*A^2*a*d + (B^2*b*d*n^2*x + B^2*a*d*n^2)*log((b*x + a)/(
d*x + c))^3 + 6*(B^2*b*c - B^2*a*d)*n^2 + 3*(B^2*b*c - B^2*a*d + (B^2*b*d*x
 + B^2*a*d)*log((b*x + a)/(d*x + c)))*log(e)^2 + 3*(B^2*b*c*n^2 + A*B*a*d*n
 + (B^2*b*d*n^2 + A*B*b*d*n)*x)*log((b*x + a)/(d*x + c))^2 + 6*(A*B*b*c - A
*B*a*d)*n + 3*(2*A*B*b*c - 2*A*B*a*d + (B^2*b*d*n*x + B^2*a*d*n)*log((b*x +
 a)/(d*x + c))^2 + 2*(B^2*b*c - B^2*a*d)*n + 2*(B^2*b*c*n + A*B*a*d + (B^2*
b*d*n + A*B*b*d)*x)*log((b*x + a)/(d*x + c)))*log(e) + 3*(2*B^2*b*c*n^2 + 2
*A*B*b*c*n + A^2*a*d + (2*B^2*b*d*n^2 + 2*A*B*b*d*n + A^2*b*d)*x)*log((b*x
+ a)/(d*x + c)))/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*g^2*i*x + (a*b^2*c^2
- 2*a^2*b*c*d + a^3*d^2)*g^2*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i),x, a
lgorithm="giac")
```

[Out] Timed out

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)^{2}\left(dix+ci\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i),x)
```

maxima [B] time = 1.22, size = 1018, normalized size = 5.12

$$-B^{2}\left(\frac{1}{\left(b^{2}c-abd\right)g^{2}ix+\left(abc-a^{2}d\right)g^{2}i}+\frac{d\log\left(bx+a\right)}{\left(b^{2}c^{2}-2\,abcd+a^{2}d^{2}\right)g^{2}i}-\frac{d\log\left(dx+c\right)}{\left(b^{2}c^{2}-2\,abcd+a^{2}d^{2}\right)g^{2}i}\right)\log\left(e\left(\frac{bx}{dx+c}+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i),x, a
lgorithm="maxima")
```

```
[Out] -B^2*(1/((b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/
((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*
c*d + a^2*d^2)*g^2*i))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2 - 2*A*B*(1/
((b^2*c - a*b*d)*g^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/((b^2*c^
2 - 2*a*b*c*d + a^2*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^
2*d^2)*g^2*i))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/3*(((b*d*x + a*d)
*log(b*x + a)^3 - (b*d*x + a*d)*log(d*x + c)^3 - 3*(b*d*x + a*d)*log(b*x +
a)^2 - 3*(b*d*x + a*d - (b*d*x + a*d)*log(b*x + a))*log(d*x + c)^2 + 6*b*c
- 6*a*d + 6*(b*d*x + a*d)*log(b*x + a) - 3*(2*b*d*x + (b*d*x + a*d)*log(b*x
 + a)^2 + 2*a*d - 2*(b*d*x + a*d)*log(b*x + a))*log(d*x + c))*n^2/(a*b^2*c^
2*g^2*i - 2*a^2*b*c*d*g^2*i + a^3*d^2*g^2*i + (b^3*c^2*g^2*i - 2*a*b^2*c*d*
g^2*i + a^2*b*d^2*g^2*i)*x) - 3*((b*d*x + a*d)*log(b*x + a)^2 + (b*d*x + a*
d)*log(d*x + c)^2 - 2*b*c + 2*a*d - 2*(b*d*x + a*d)*log(b*x + a) + 2*(b*d*x
 + a*d - (b*d*x + a*d)*log(b*x + a))*log(d*x + c))*n*log(e*(b*x/(d*x + c) +
 a/(d*x + c))^n)/(a*b^2*c^2*g^2*i - 2*a^2*b*c*d*g^2*i + a^3*d^2*g^2*i + (b^
3*c^2*g^2*i - 2*a*b^2*c*d*g^2*i + a^2*b*d^2*g^2*i)*x))*B^2 + ((b*d*x + a*d)
*log(b*x + a)^2 + (b*d*x + a*d)*log(d*x + c)^2 - 2*b*c + 2*a*d - 2*(b*d*x +
 a*d)*log(b*x + a) + 2*(b*d*x + a*d - (b*d*x + a*d)*log(b*x + a))*log(d*x +
 c))*A*B*n/(a*b^2*c^2*g^2*i - 2*a^2*b*c*d*g^2*i + a^3*d^2*g^2*i + (b^3*c^2*
g^2*i - 2*a*b^2*c*d*g^2*i + a^2*b*d^2*g^2*i)*x) - A^2*(1/((b^2*c - a*b*d)*g
^2*i*x + (a*b*c - a^2*d)*g^2*i) + d*log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^
2*d^2)*g^2*i) - d*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g^2*i))
```

mupad [B] time = 5.85, size = 361, normalized size = 1.81

$$\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^{n}\right)^{2}\left(\frac{B^{2}}{\left(a\,d-b\,c\right)\left(a\,g^{2}\,i+b\,g^{2}\,i\,x\right)}-\frac{B\,d\,\left(A+B\,n\right)}{g^{2}\,i\,n\,\left(a\,d-b\,c\right)^{2}}\right)+\frac{A^{2}+2\,A\,B\,n+2\,B^{2}\,n^{2}}{\left(a\,d-b\,c\right)\left(a\,g^{2}\,i+b\,g^{2}\,i\,x\right)}+\frac{2\,B\,\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right.\right.}{\left(a\,d-b\,c\right)\left(a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^2*(c*i + d*i*x)
),x)
```

```
[Out] log(e*((a + b*x)/(c + d*x))^n)^2*(B^2/((a*d - b*c)*(a*g^2*i + b*g^2*i*x)) -
 (B*d*(A + B*n))/(g^2*i*n*(a*d - b*c)^2)) + (A^2 + 2*B^2*n^2 + 2*A*B*n)/((a
*d - b*c)*(a*g^2*i + b*g^2*i*x)) + (2*B*log(e*((a + b*x)/(c + d*x))^n)*(A +
 B*n))/((a*d - b*c)*(a*g^2*i + b*g^2*i*x)) + (d*atan((d*(2*b*d*x + (a^2*d^2
*g^2*i - b^2*c^2*g^2*i)/(g^2*i*(a*d - b*c)))*(A^2 + 2*B^2*n^2 + 2*A*B*n)*1i
)/((a*d - b*c)*(A^2*d + 2*B^2*d*n^2 + 2*A*B*d*n)))*(A^2 + 2*B^2*n^2 + 2*A*B
*n)*2i)/(g^2*i*(a*d - b*c)^2) - (B^2*d*log(e*((a + b*x)/(c + d*x))^n)^3)/(3
*g^2*i*n*(a*d - b*c)^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**2/(d*i*x+c*i),x)
```

```
[Out] Timed out
```

3.192 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3(ci+dix)}\,dx$

Optimal. Leaf size=369

$$-\frac{b^2(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2g^3i(a+bx)^2(bc-ad)^3}-\frac{b^2Bn(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^3i(a+bx)^2(bc-ad)^3}+\frac{d^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^3}{3Bg^3in(bc-ad)^3}+\frac{2b}{}$$

```
[Out] 4*b*B^2*d*n^2*(d*x+c)/(-a*d+b*c)^3/g^3/i/(b*x+a)-1/4*b^2*B^2*n^2*(d*x+c)^2/
(-a*d+b*c)^3/g^3/i/(b*x+a)^2+4*b*B*d*n*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^
n))/(-a*d+b*c)^3/g^3/i/(b*x+a)-1/2*b^2*B*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*
x+c))^n))/(-a*d+b*c)^3/g^3/i/(b*x+a)^2+2*b*d*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*
x+c))^n))^2/(-a*d+b*c)^3/g^3/i/(b*x+a)-1/2*b^2*(d*x+c)^2*(A+B*ln(e*((b*x+a)
/(d*x+c))^n))^2/(-a*d+b*c)^3/g^3/i/(b*x+a)^2+1/3*d^2*(A+B*ln(e*((b*x+a)/(d*
x+c))^n))^3/B/(-a*d+b*c)^3/g^3/i/n
```

Rubi [C] time = 7.20, antiderivative size = 2025, normalized size of antiderivative = 5.49, number of steps used = 111, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.689, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^3*(c*i + d*i*x)
),x]
```

```
[Out] -(B^2*n^2)/(4*(b*c - a*d)*g^3*i*(a + b*x)^2) + (7*B^2*d*n^2)/(2*(b*c - a*d)
^2*g^3*i*(a + b*x)) + (7*B^2*d^2*n^2*Log[a + b*x])/(2*(b*c - a*d)^3*g^3*i)
- (A*B*d^2*n*Log[a + b*x]^2)/((b*c - a*d)^3*g^3*i) - (3*B^2*d^2*n^2*Log[a +
 b*x]^2)/(2*(b*c - a*d)^3*g^3*i) - (B^2*d^2*Log[-((b*c - a*d)/(d*(a + b*x))
)]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^3*g^3*i) - (B^2*d^2*Log[a
 + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^3*g^3*i) - (B*n*(A +
 B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)*g^3*i*(a + b*x)^2) + (3*
B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g^3*i*(a + b*x
)) + (3*B*d^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c
- a*d)^3*g^3*i) - (A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(2*(b*c - a*d)*g
^3*i*(a + b*x)^2) + (d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*
d)^2*g^3*i*(a + b*x)) + (d^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x)
)^n])^2)/((b*c - a*d)^3*g^3*i) - (7*B^2*d^2*n^2*Log[c + d*x])/(2*(b*c - a*d
)^3*g^3*i) + (2*A*B*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(
(b*c - a*d)^3*g^3*i) + (3*B^2*d^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log
[c + d*x])/((b*c - a*d)^3*g^3*i) + (B^2*d^2*Log[(a + b*x)^n]^2*Log[c + d*x]
)/((b*c - a*d)^3*g^3*i) - (3*B*d^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
*Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (d^2*(A + B*Log[e*((a + b*x)/(c + d*
x))^n])^2*Log[c + d*x])/((b*c - a*d)^3*g^3*i) - (A*B*d^2*n*Log[c + d*x]^2)/
((b*c - a*d)^3*g^3*i) - (3*B^2*d^2*n^2*Log[c + d*x]^2)/(2*(b*c - a*d)^3*g^3
*i) + (B^2*d^2*n^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^3*g^3*i) - (B^
2*d^2*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2)/((b*c - a*d)^3*g^3*i
) - (B^2*d^2*n^2*Log[c + d*x]^3)/(3*(b*c - a*d)^3*g^3*i) + (2*A*B*d^2*n*Log
[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) + (3*B^2*d^
2*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) -
(B^2*d^2*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*
g^3*i) + (2*B^2*d^2*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)])/((b*c
- a*d)^3*g^3*i) + (B^2*d^2*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d)
```

```
^3*g^3*i) - (B^2*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-n)]^
2)/((b*c - a*d)^3*g^3*i) - (2*B^2*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*L
og[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d
*x)^(-n)]))/((b*c - a*d)^3*g^3*i) + (2*A*B*d^2*n*PolyLog[2, -((d*(a + b*x))
/(b*c - a*d))])/((b*c - a*d)^3*g^3*i) + (3*B^2*d^2*n^2*PolyLog[2, -((d*(a +
 b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^3*i) - (2*B^2*d^2*n*Log[(a + b*x)^n]
*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^3*i) + (2*A*B*d
^2*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) + (3*B^2*
d^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) + (2*B
^2*d^2*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c -
 a*d)^3*g^3*i) - (2*B^2*d^2*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x
))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c -
 a*d)^3*g^3*i) + (2*B^2*d^2*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 +
 (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^3*g^3*i) + (2*B^2*d^2*n^2*PolyLog
[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^3*i) + (2*B^2*d^2*n^2*P
olyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^3*i) + (2*B^2*d^2*n^
2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^3*g^3*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
```

```
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(192c+192dx)(ag+bgx)^3}\,dx = \int\left(\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc-ad)g^3(a+bx)^3} - \frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc-ad)^2g^3(a+bx)^2} + \frac{bd^2\left(A+B\cdots\right.}{192(bc-\cdots}\right.$$

$$= \frac{\left(bd^2\right)\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}\,dx}{192(bc-ad)^3g^3} - \frac{d^3\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}\,dx}{192(bc-ad)^3g^3} - \frac{(bd)\int\frac{\left(A+B\log\left(e\cdots\right.\right.}{(a+\cdots}}{192(bc-\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{384(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(A\cdots\right.}{192(b\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{384(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(A\cdots\right.}{192(b\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{384(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(A\cdots\right.}{192(b\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{384(bc-ad)g^3(a+bx)^2} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{192(bc-ad)^2g^3(a+bx)} + \frac{d^2\log(a+bx)\left(A\cdots\right.}{192(b\cdots}$$

$$= -\frac{Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{384(bc-ad)g^3(a+bx)^2} + \frac{Bdn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{64(bc-ad)^2g^3(a+bx)} + \frac{Bd^2n\log(a+\cdots}{\cdots}$$

$$= -\frac{B^2d^2\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{192(bc-ad)^3g^3} - \frac{Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{384(bc-ad)g^3(a+bx)^2} + \frac{Bdn\left(A\cdots\right.}{64(bc\cdots}$$

$$= -\frac{B^2d^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{192(bc-ad)^3g^3} - \frac{B^2d^2\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{192(bc-ad)^3g^3} - \cdots$$

$$= -\frac{B^2n^2}{768(bc-ad)g^3(a+bx)^2} + \frac{7B^2dn^2}{384(bc-ad)^2g^3(a+bx)} + \frac{7B^2d^2n^2\log(a+bx)}{384(bc-ad)^3g^3}\cdots$$

$$= -\frac{B^2n^2}{768(bc-ad)g^3(a+bx)^2} + \frac{7B^2dn^2}{384(bc-ad)^2g^3(a+bx)} + \frac{7B^2d^2n^2\log(a+bx)}{384(bc-ad)^3g^3}\cdots$$

$$= -\frac{B^2n^2}{768(bc-ad)g^3(a+bx)^2} + \frac{7B^2dn^2}{384(bc-ad)^2g^3(a+bx)} + \frac{7B^2d^2n^2\log(a+bx)}{384(bc-ad)^3g^3}\cdots$$

$$= -\frac{B^2n^2}{768(bc-ad)g^3(a+bx)^2} + \frac{7B^2dn^2}{384(bc-ad)^2g^3(a+bx)} + \frac{7B^2d^2n^2\log(a+bx)}{384(bc-ad)^3g^3}\cdots$$

$$= -\frac{B^2n^2}{768(bc-ad)g^3(a+bx)^2} + \frac{7B^2dn^2}{384(bc-ad)^2g^3(a+bx)} + \frac{7B^2d^2n^2\log(a+bx)}{384(bc-ad)^3g^3}\cdots$$

Mathematica [B] time = 1.40, size = 975, normalized size = 2.64

$$\frac{4B^2d^2n^2(a+bx)^2\log^3\left(\frac{a+bx}{c+dx}\right)+6Bn\left(2Ad^2x^2b^2+3Bd^2nx^2b^2-Bc^2nb^2+2Bcdnxb^2+4aBcdnb+4aAd^2xb+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^3*(c*i +
d*i*x)),x]
```

```
[Out] (4*B^2*d^2*n^2*(a + b*x)^2*Log[(a + b*x)/(c + d*x)]^3 + 6*B*n*Log[(a + b*x)
/(c + d*x)]^2*(2*a^2*A*d^2 - b^2*B*c^2*n + 4*a*b*B*c*d*n + 4*a*A*b*d^2*x +
2*b^2*B*c*d*n*x + 4*a*b*B*d^2*n*x + 2*A*b^2*d^2*x^2 + 3*b^2*B*d^2*n*x^2 + 2
*B*d^2*(a + b*x)^2*Log[e*((a + b*x)/(c + d*x))^n] - 2*B*d^2*n*(a + b*x)^2*L
og[(a + b*x)/(c + d*x)]) - 6*B*(b*c - a*d)*n*Log[(a + b*x)/(c + d*x)]*(2*A*
b*c - 6*a*A*d + b*B*c*n - 7*a*B*d*n - 4*A*b*d*x - 6*b*B*d*n*x + 2*B*(-3*a*d
 + b*(c - 2*d*x))*Log[e*((a + b*x)/(c + d*x))^n] + 2*B*n*(-(b*c) + 3*a*d +
2*b*d*x)*Log[(a + b*x)/(c + d*x)]) - 3*(b*c - a*d)^2*(2*A^2 + 2*A*B*n + B^2
*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + B*n)*Log[(a +
b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*
x)/(c + d*x))^n]*(2*A + B*n - 2*B*n*Log[(a + b*x)/(c + d*x)])) + 6*d*(b*c -
 a*d)*(a + b*x)*(2*A^2 + 6*A*B*n + 7*B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c +
d*x))^n]^2 - 2*B*n*(2*A + 3*B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(
a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(2*A + 3*B*n - 2
*B*n*Log[(a + b*x)/(c + d*x)])) + 6*d^2*(a + b*x)^2*Log[a + b*x]*(2*A^2 + 6
*A*B*n + 7*B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A +
3*B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*
B*Log[e*((a + b*x)/(c + d*x))^n]*(2*A + 3*B*n - 2*B*n*Log[(a + b*x)/(c + d*
x)])) - 6*d^2*(a + b*x)^2*(2*A^2 + 6*A*B*n + 7*B^2*n^2 + 2*B^2*Log[e*((a +
b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + 3*B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2
*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(2*A +
 3*B*n - 2*B*n*Log[(a + b*x)/(c + d*x)]))*Log[c + d*x])/(12*(b*c - a*d)^3*g
^3*i*(a + b*x)^2)
```

fricas [B] time = 1.00, size = 1068, normalized size = 2.89

$$-\frac{6A^2b^2c^2-24A^2abcd+18A^2a^2d^2-4\left(B^2b^2d^2n^2x^2+2B^2abd^2n^2x+B^2a^2d^2n^2\right)\log\left(\frac{bx+a}{dx+c}\right)^3+3\left(B^2b^2c^2-16\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i),x, a
lgorithm="fricas")
```

```
[Out] -1/12*(6*A^2*b^2*c^2 - 24*A^2*a*b*c*d + 18*A^2*a^2*d^2 - 4*(B^2*b^2*d^2*n^2
*x^2 + 2*B^2*a*b*d^2*n^2*x + B^2*a^2*d^2*n^2)*log((b*x + a)/(d*x + c))^3 +
3*(B^2*b^2*c^2 - 16*B^2*a*b*c*d + 15*B^2*a^2*d^2)*n^2 + 6*(B^2*b^2*c^2 - 4*
B^2*a*b*c*d + 3*B^2*a^2*d^2 - 2*(B^2*b^2*c*d - B^2*a*b*d^2)*x - 2*(B^2*b^2*
d^2*x^2 + 2*B^2*a*b*d^2*x + B^2*a^2*d^2)*log((b*x + a)/(d*x + c)))*log(e)^2
 - 6*(2*A*B*a^2*d^2*n - (B^2*b^2*c^2 - 4*B^2*a*b*c*d)*n^2 + (3*B^2*b^2*d^2*
n^2 + 2*A*B*b^2*d^2*n)*x^2 + 2*(2*A*B*a*b*d^2*n + (B^2*b^2*c*d + 2*B^2*a*b*
d^2)*n^2)*x)*log((b*x + a)/(d*x + c))^2 + 6*(A*B*b^2*c^2 - 8*A*B*a*b*c*d +
7*A*B*a^2*d^2)*n - 6*(2*A^2*b^2*c*d - 2*A^2*a*b*d^2 + 7*(B^2*b^2*c*d - B^2*
a*b*d^2)*n^2 + 6*(A*B*b^2*c*d - A*B*a*b*d^2)*n)*x + 6*(2*A*B*b^2*c^2 - 8*A*
B*a*b*c*d + 6*A*B*a^2*d^2 - 2*(B^2*b^2*d^2*n*x^2 + 2*B^2*a*b*d^2*n*x + B^2*
a^2*d^2*n)*log((b*x + a)/(d*x + c))^2 + (B^2*b^2*c^2 - 8*B^2*a*b*c*d + 7*B^
2*a^2*d^2)*n - 2*(2*A*B*b^2*c*d - 2*A*B*a*b*d^2 + 3*(B^2*b^2*c*d - B^2*a*b*
d^2)*n)*x - 2*(2*A*B*a^2*d^2 + (3*B^2*b^2*d^2*n + 2*A*B*b^2*d^2)*x^2 - (B^2
```

```
*b^2*c^2 - 4*B^2*a*b*c*d)*n + 2*(2*A*B*a*b*d^2 + (B^2*b^2*c*d + 2*B^2*a*b*d
^2)*n)*x)*log((b*x + a)/(d*x + c)))*log(e) - 6*(2*A^2*a^2*d^2 - (B^2*b^2*c^
2 - 8*B^2*a*b*c*d)*n^2 + (7*B^2*b^2*d^2*n^2 + 6*A*B*b^2*d^2*n + 2*A^2*b^2*d
^2)*x^2 - 2*(A*B*b^2*c^2 - 4*A*B*a*b*c*d)*n + 2*(2*A^2*a*b*d^2 + (3*B^2*b^2
*c*d + 4*B^2*a*b*d^2)*n^2 + 2*(A*B*b^2*c*d + 2*A*B*a*b*d^2)*n)*x)*log((b*x
+ a)/(d*x + c)))/((b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)
*g^3*i*x^2 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^2*d + 3*a^3*b^2*c*d^2 - a^4*b*d^3)*
g^3*i*x + (a^2*b^3*c^3 - 3*a^3*b^2*c^2*d + 3*a^4*b*c*d^2 - a^5*d^3)*g^3*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)^{3} \left(dix+ci\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i),x)
```

maxima [B] time = 2.12, size = 2126, normalized size = 5.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i),x, a
lgorithm="maxima")
```

```
[Out] 1/2*B^2*((2*b*d*x - b*c + 3*a*d)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3
*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a^2*b^2*c^2 -
 2*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2
*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i) - 2*d^2*log(d*x + c)/((b^3*c^3 - 3*a*b
^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i))*log(e*(b*x/(d*x + c) + a/(d*x +
 c))^n)^2 + A*B*((2*b*d*x - b*c + 3*a*d)/((b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*
d^2)*g^3*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*g^3*i*x + (a^2*b
^2*c^2 - 2*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d^2*log(b*x + a)/((b^3*c^3 - 3*a
*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i) - 2*d^2*log(d*x + c)/((b^3*c^3
 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i))*log(e*(b*x/(d*x + c) +
a/(d*x + c))^n) - 1/12*((3*b^2*c^2 - 48*a*b*c*d + 45*a^2*d^2 - 4*(b^2*d^2*x
^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a)^3 + 4*(b^2*d^2*x^2 + 2*a*b*d^2*x +
 a^2*d^2)*log(d*x + c)^3 + 18*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x
 + a)^2 + 6*(3*b^2*d^2*x^2 + 6*a*b*d^2*x + 3*a^2*d^2 - 2*(b^2*d^2*x^2 + 2*a
*b*d^2*x + a^2*d^2)*log(b*x + a))*log(d*x + c)^2 - 42*(b^2*c*d - a*b*d^2)*x
 - 42*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a) + 6*(7*b^2*d^2*x^2
 + 14*a*b*d^2*x + 7*a^2*d^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b
*x + a)^2 - 6*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a))*log(d*x +
 c))*n^2/(a^2*b^3*c^3*g^3*i - 3*a^3*b^2*c^2*d*g^3*i + 3*a^4*b*c*d^2*g^3*i -
 a^5*d^3*g^3*i + (b^5*c^3*g^3*i - 3*a*b^4*c^2*d*g^3*i + 3*a^2*b^3*c*d^2*g^3
```

```
*i - a^3*b^2*d^3*g^3*i)*x^2 + 2*(a*b^4*c^3*g^3*i - 3*a^2*b^3*c^2*d*g^3*i +
3*a^3*b^2*c*d^2*g^3*i - a^4*b*d^3*g^3*i)*x) + 6*(b^2*c^2 - 8*a*b*c*d + 7*a^
2*d^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a)^2 + 2*(b^2*d^2
*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(d*x + c)^2 - 6*(b^2*c*d - a*b*d^2)*x - 6*
(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a) + 2*(3*b^2*d^2*x^2 + 6*a
*b*d^2*x + 3*a^2*d^2 - 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a)
)*log(d*x + c))*n*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(a^2*b^3*c^3*g^3*i
 - 3*a^3*b^2*c^2*d*g^3*i + 3*a^4*b*c*d^2*g^3*i - a^5*d^3*g^3*i + (b^5*c^3*g
^3*i - 3*a*b^4*c^2*d*g^3*i + 3*a^2*b^3*c*d^2*g^3*i - a^3*b^2*d^3*g^3*i)*x^2
 + 2*(a*b^4*c^3*g^3*i - 3*a^2*b^3*c^2*d*g^3*i + 3*a^3*b^2*c*d^2*g^3*i - a^4
*b*d^3*g^3*i)*x))*B^2 - 1/2*(b^2*c^2 - 8*a*b*c*d + 7*a^2*d^2 + 2*(b^2*d^2*x
^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*a*b*d^2*x +
 a^2*d^2)*log(d*x + c)^2 - 6*(b^2*c*d - a*b*d^2)*x - 6*(b^2*d^2*x^2 + 2*a*b
*d^2*x + a^2*d^2)*log(b*x + a) + 2*(3*b^2*d^2*x^2 + 6*a*b*d^2*x + 3*a^2*d^2
 - 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a))*log(d*x + c))*A*B*
n/(a^2*b^3*c^3*g^3*i - 3*a^3*b^2*c^2*d*g^3*i + 3*a^4*b*c*d^2*g^3*i - a^5*d^
3*g^3*i + (b^5*c^3*g^3*i - 3*a*b^4*c^2*d*g^3*i + 3*a^2*b^3*c*d^2*g^3*i - a^
3*b^2*d^3*g^3*i)*x^2 + 2*(a*b^4*c^3*g^3*i - 3*a^2*b^3*c^2*d*g^3*i + 3*a^3*b
^2*c*d^2*g^3*i - a^4*b*d^3*g^3*i)*x) + 1/2*A^2*((2*b*d*x - b*c + 3*a*d)/((b
^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*g^3*i*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*
d + a^3*b*d^2)*g^3*i*x + (a^2*b^2*c^2 - 2*a^3*b*c*d + a^4*d^2)*g^3*i) + 2*d
^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^3*i)
 - 2*d^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*
g^3*i))
```

mupad [B] time = 8.49, size = 1011, normalized size = 2.74

$$\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\left(\frac{B^2\,n}{x^2\,\left(b^3\,c\,g^3\,i-a\,b^2\,d\,g^3\,i\right)+x\,\left(2\,a\,b^2\,c\,g^3\,i-2\,a^2\,b\,d\,g^3\,i\right)-a^3\,d\,g^3\,i+a^2\,b\,c\,g^3\,i}-\frac{\cdots}{g^3\,i\,n\,(a\,d\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^3*(c*i + d*i*x)
),x)
```

```
[Out] log(e*((a + b*x)/(c + d*x))^n)*((B^2*n)/(x^2*(b^3*c*g^3*i - a*b^2*d*g^3*i)
+ x*(2*a*b^2*c*g^3*i - 2*a^2*b*d*g^3*i) - a^3*d*g^3*i + a^2*b*c*g^3*i) - (d
^2*(3*B^2*n + 2*A*B)*((a*g^3*i*n*(a*d - b*c)^2)/(2*d) + (g^3*i*n*(a*d - b*c
)^2*(2*a*d - b*c))/(2*d^2) + (b*g^3*i*n*x*(a*d - b*c)^2)/d))/(g^3*i*n*(a*d
- b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(x^2*(b^3*c*g^3*i - a*b^2*d*g^3*i) +
 x*(2*a*b^2*c*g^3*i - 2*a^2*b*d*g^3*i) - a^3*d*g^3*i + a^2*b*c*g^3*i))) - l
og(e*((a + b*x)/(c + d*x))^n)^2*((d^2*(3*B^2*n + 2*A*B))/(2*g^3*i*n*(a*d -
b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) - (B^2*d^2*((g^3*i*n*(a*d - b*c)*(2*a
*d - b*c))/(2*d^2) + (a*g^3*i*n*(a*d - b*c))/(2*d) + (b*g^3*i*n*x*(a*d - b*
c))/d))/(g^3*i*n*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(a^2*g^3*i + b
^2*g^3*i*x^2 + 2*a*b*g^3*i*x))) - ((6*A^2*a*d - 2*A^2*b*c + 15*B^2*a*d*n^2
- B^2*b*c*n^2 + 14*A*B*a*d*n - 2*A*B*b*c*n)/(2*(a*d - b*c)) + (x*(2*A^2*b*d
 + 7*B^2*b*d*n^2 + 6*A*B*b*d*n))/(a*d - b*c))/(x^2*(2*b^3*c*g^3*i - 2*a*b^2
*d*g^3*i) + x*(4*a*b^2*c*g^3*i - 4*a^2*b*d*g^3*i) - 2*a^3*d*g^3*i + 2*a^2*b
*c*g^3*i) + (d^2*atan((d^2*((a^3*d^3*g^3*i + b^3*c^3*g^3*i - a*b^2*c^2*d*g^
3*i - a^2*b*c*d^2*g^3*i)/(a^2*d^2*g^3*i + b^2*c^2*g^3*i - 2*a*b*c*d*g^3*i)
+ 2*b*d*x)*(A^2 + (7*B^2*n^2)/2 + 3*A*B*n)*(a^2*d^2*g^3*i + b^2*c^2*g^3*i -
 2*a*b*c*d*g^3*i)*2i)/(g^3*i*(a*d - b*c)^3*(2*A^2*d^2 + 7*B^2*d^2*n^2 + 6*A
*B*d^2*n)))*(A^2 + (7*B^2*n^2)/2 + 3*A*B*n)*2i)/(g^3*i*(a*d - b*c)^3) - (B^
2*d^2*log(e*((a + b*x)/(c + d*x))^n)^3)/(3*g^3*i*n*(a*d - b*c)*(a^2*d^2 + b
^2*c^2 - 2*a*b*c*d))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**3/(d*i*x+c*i),x)
[Out] Timed out
```

3.193 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^4(ci+dix)}\,dx$

Optimal. Leaf size=543

$$-\frac{b^3(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{3g^4i(a+bx)^3(bc-ad)^4}-\frac{2b^3Bn(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{9g^4i(a+bx)^3(bc-ad)^4}+\frac{3b^2d(c+dx)^2\left(B\log\left(e\left(\frac{a+b}{c+d}\right.\right.\right.}{2g^4i(a+bx)^2(bc-a}$$

```
[Out] -6*b*B^2*d^2*n^2*(d*x+c)/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/4*b^2*B^2*d*n^2*(d*x+
c)^2/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-2/27*b^3*B^2*n^2*(d*x+c)^3/(-a*d+b*c)^4/g
^4/i/(b*x+a)^3-6*b*B*d^2*n*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*
c)^4/g^4/i/(b*x+a)+3/2*b^2*B*d*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/
(-a*d+b*c)^4/g^4/i/(b*x+a)^2-2/9*b^3*B*n*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+
c))^n))/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-3*b*d^2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*
x+c))^n))^2/(-a*d+b*c)^4/g^4/i/(b*x+a)+3/2*b^2*d*(d*x+c)^2*(A+B*ln(e*((b*x+
a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^4/i/(b*x+a)^2-1/3*b^3*(d*x+c)^3*(A+B*ln(e*
((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^4/i/(b*x+a)^3-1/3*d^3*(A+B*ln(e*((b*
x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^4/g^4/i/n
```

Rubi [C] time = 8.35, antiderivative size = 2180, normalized size of antiderivative = 4.01, number of steps used = 143, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.689, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i + d*i*x)
),x]
```

```
[Out] (-2*B^2*n^2)/(27*(b*c - a*d)*g^4*i*(a + b*x)^3) + (19*B^2*d*n^2)/(36*(b*c -
 a*d)^2*g^4*i*(a + b*x)^2) - (85*B^2*d^2*n^2)/(18*(b*c - a*d)^3*g^4*i*(a +
b*x)) - (85*B^2*d^3*n^2*Log[a + b*x])/(18*(b*c - a*d)^4*g^4*i) + (A*B*d^3*n
*Log[a + b*x]^2)/((b*c - a*d)^4*g^4*i) + (11*B^2*d^3*n^2*Log[a + b*x]^2)/(6
*(b*c - a*d)^4*g^4*i) + (B^2*d^3*Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*((
a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^4*i) + (B^2*d^3*Log[a + b*x]*Log
[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^4*i) - (2*B*n*(A + B*Log[e*
((a + b*x)/(c + d*x))^n]))/(9*(b*c - a*d)*g^4*i*(a + b*x)^3) + (5*B*d*n*(A
+ B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*(b*c - a*d)^2*g^4*i*(a + b*x)^2) -
(11*B*d^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*(b*c - a*d)^3*g^4*i*
(a + b*x)) - (11*B*d^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
))/(3*(b*c - a*d)^4*g^4*i) - (A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(3*(b
*c - a*d)*g^4*i*(a + b*x)^3) + (d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)
/(2*(b*c - a*d)^2*g^4*i*(a + b*x)^2) - (d^2*(A + B*Log[e*((a + b*x)/(c + d*
x))^n])^2)/((b*c - a*d)^3*g^4*i*(a + b*x)) - (d^3*Log[a + b*x]*(A + B*Log[e
*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^4*g^4*i) + (85*B^2*d^3*n^2*Log[c
 + d*x])/(18*(b*c - a*d)^4*g^4*i) - (2*A*B*d^3*n*Log[-((d*(a + b*x))/(b*c -
 a*d))]*Log[c + d*x])/((b*c - a*d)^4*g^4*i) - (11*B^2*d^3*n^2*Log[-((d*(a +
 b*x))/(b*c - a*d))]*Log[c + d*x])/(3*(b*c - a*d)^4*g^4*i) - (B^2*d^3*Log[(
a + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)^4*g^4*i) + (11*B*d^3*n*(A + B*Log[
e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(3*(b*c - a*d)^4*g^4*i) + (d^3*(A
 + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/((b*c - a*d)^4*g^4*i)
+ (A*B*d^3*n*Log[c + d*x]^2)/((b*c - a*d)^4*g^4*i) + (11*B^2*d^3*n^2*Log[c
+ d*x]^2)/(6*(b*c - a*d)^4*g^4*i) - (B^2*d^3*n^2*Log[a + b*x]*Log[c + d*x]^
2)/((b*c - a*d)^4*g^4*i) + (B^2*d^3*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c
```

```
+ d*x]^2)/((b*c - a*d)^4*g^4*i) + (B^2*d^3*n^2*Log[c + d*x]^3)/(3*(b*c - a*
d)^4*g^4*i) - (2*A*B*d^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b
*c - a*d)^4*g^4*i) - (11*B^2*d^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c -
a*d)])/(3*(b*c - a*d)^4*g^4*i) + (B^2*d^3*Log[(a + b*x)^n]^2*Log[(b*(c + d*
x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*i) - (2*B^2*d^3*n*Log[a + b*x]*Log[c +
 d*x]*Log[(c + d*x)^(-n)])/((b*c - a*d)^4*g^4*i) - (B^2*d^3*Log[a + b*x]*Lo
g[(c + d*x)^(-n)]^2)/((b*c - a*d)^4*g^4*i) + (B^2*d^3*Log[-((d*(a + b*x))/(
b*c - a*d))]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^4*g^4*i) + (2*B^2*d^3*n*Lo
g[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a
+ b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)]))/((b*c - a*d)^4*g^4*i) - (2*A*B
*d^3*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^4*i) - (1
1*B^2*d^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(3*(b*c - a*d)^4*g^
4*i) + (2*B^2*d^3*n*Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d)
)])/((b*c - a*d)^4*g^4*i) - (2*A*B*d^3*n*PolyLog[2, (b*(c + d*x))/(b*c - a*
d)])/((b*c - a*d)^4*g^4*i) - (11*B^2*d^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c
- a*d)])/(3*(b*c - a*d)^4*g^4*i) - (2*B^2*d^3*n*Log[(c + d*x)^(-n)]*PolyLog
[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*i) + (2*B^2*d^3*n*(Log[(
a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog
[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^4*i) - (2*B^2*d^3*n*Log[e*
((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c -
 a*d)^4*g^4*i) - (2*B^2*d^3*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/(
(b*c - a*d)^4*g^4*i) - (2*B^2*d^3*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)]
)/((b*c - a*d)^4*g^4*i) - (2*B^2*d^3*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a +
 b*x))])/((b*c - a*d)^4*g^4*i)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(193c+193dx)(ag+bgx)^4}\,dx = \int \left(\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{193(bc-ad)g^4(a+bx)^4} - \frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{193(bc-ad)^2g^4(a+bx)^3} + \frac{bd^2\left(A+\cdots\right.}{193(bc\cdots}\right.$$

$$= -\frac{\left(bd^3\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}\,dx}{193(bc-ad)^4g^4} + \frac{d^4\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}\,dx}{193(bc-ad)^4g^4} + \frac{\left(bd^2\right)\int \frac{\left(A+\cdots\right.}{}}{193(\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{579(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{386(bc-ad)^2g^4(a+bx)^2} - \frac{d^2\left(A+B\log\cdots\right.}{193(bc-ad)\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{579(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{386(bc-ad)^2g^4(a+bx)^2} - \frac{d^2\left(A+B\log\cdots\right.}{193(bc-ad)\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{579(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{386(bc-ad)^2g^4(a+bx)^2} - \frac{d^2\left(A+B\log\cdots\right.}{193(bc-ad)\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{579(bc-ad)g^4(a+bx)^3} + \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{386(bc-ad)^2g^4(a+bx)^2} - \frac{d^2\left(A+B\log\cdots\right.}{193(bc-ad)\cdots}$$

$$= -\frac{2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{1737(bc-ad)g^4(a+bx)^3} + \frac{5Bdn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{1158(bc-ad)^2g^4(a+bx)^2} - \frac{11Bd^2n\cdots}{579\cdots}$$

$$= \frac{B^2d^3\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{193(bc-ad)^4g^4} - \frac{2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{1737(bc-ad)g^4(a+bx)^3} + \frac{5Bdn\cdots}{115\cdots}$$

$$= \frac{B^2d^3\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{193(bc-ad)^4g^4} + \frac{B^2d^3\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{193(bc-ad)^4g^4} \cdots$$

$$= -\frac{2B^2n^2}{5211(bc-ad)g^4(a+bx)^3} + \frac{19B^2dn^2}{6948(bc-ad)^2g^4(a+bx)^2} - \frac{85B^2d^2\cdots}{3474(bc-ad)^3\cdots}$$

$$= -\frac{2B^2n^2}{5211(bc-ad)g^4(a+bx)^3} + \frac{19B^2dn^2}{6948(bc-ad)^2g^4(a+bx)^2} - \frac{85B^2d^2\cdots}{3474(bc-ad)^3\cdots}$$

$$= -\frac{2B^2n^2}{5211(bc-ad)g^4(a+bx)^3} + \frac{19B^2dn^2}{6948(bc-ad)^2g^4(a+bx)^2} - \frac{85B^2d^2\cdots}{3474(bc-ad)^3\cdots}$$

$$= -\frac{2B^2n^2}{5211(bc-ad)g^4(a+bx)^3} + \frac{19B^2dn^2}{6948(bc-ad)^2g^4(a+bx)^2} - \frac{85B^2d^2\cdots}{3474(bc-ad)^3\cdots}$$

$$= -\frac{2B^2n^2}{5211(bc-ad)g^4(a+bx)^3} + \frac{19B^2dn^2}{6948(bc-ad)^2g^4(a+bx)^2} - \frac{85B^2d^2\cdots}{3474(bc-ad)^3\cdots}$$

Mathematica [B] time = 1.92, size = 1295, normalized size = 2.38

$$-\frac{4\left(9A^2+6BnA+2B^2n^2+9B^2\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+9B^2n^2\log^2\left(\frac{a+bx}{c+dx}\right)-6Bn(3A+Bn)\log\left(\frac{a+bx}{c+dx}\right)+6B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i +
d*i*x)),x]
```

```
[Out] -1/108*(36*B^2*d^3*n^2*(a + b*x)^3*Log[(a + b*x)/(c + d*x)]^3 + 18*B*n*Log[
(a + b*x)/(c + d*x)]^2*(6*a^3*A*d^3 + 2*b^3*B*c^3*n - 9*a*b^2*B*c^2*d*n + 1
8*a^2*b*B*c*d^2*n + 18*a^2*A*b*d^3*x - 3*b^3*B*c^2*d*n*x + 18*a*b^2*B*c*d^2
*n*x + 18*a^2*b*B*d^3*n*x + 18*a*A*b^2*d^3*x^2 + 6*b^3*B*c*d^2*n*x^2 + 27*a
*b^2*B*d^3*n*x^2 + 6*A*b^3*d^3*x^3 + 11*b^3*B*d^3*n*x^3 + 6*B*d^3*(a + b*x)
^3*Log[e*((a + b*x)/(c + d*x))^n] - 6*B*d^3*n*(a + b*x)^3*Log[(a + b*x)/(c
+ d*x)]) - 3*d*(b*c - a*d)^2*(a + b*x)*(18*A^2 + 30*A*B*n + 19*B^2*n^2 + 18
*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(6*A + 5*B*n)*Log[(a + b*x)/(
c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c
 + d*x))^n]*(6*A + 5*B*n - 6*B*n*Log[(a + b*x)/(c + d*x)])) + 6*d^2*(b*c -
a*d)*(a + b*x)^2*(18*A^2 + 66*A*B*n + 85*B^2*n^2 + 18*B^2*Log[e*((a + b*x)/
(c + d*x))^n]^2 - 6*B*n*(6*A + 11*B*n)*Log[(a + b*x)/(c + d*x)] + 18*B^2*n^
2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(6*A + 11
*B*n - 6*B*n*Log[(a + b*x)/(c + d*x)])) + 6*d^3*(a + b*x)^3*Log[a + b*x]*(1
8*A^2 + 66*A*B*n + 85*B^2*n^2 + 18*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6
*B*n*(6*A + 11*B*n)*Log[(a + b*x)/(c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c
+ d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(6*A + 11*B*n - 6*B*n*Log[(a
 + b*x)/(c + d*x)])) + 4*(b*c - a*d)^3*(9*A^2 + 6*A*B*n + 2*B^2*n^2 + 9*B^2
*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(3*A + B*n)*Log[(a + b*x)/(c + d*
x)] + 9*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x)
)^n]*(3*A + B*n - 3*B*n*Log[(a + b*x)/(c + d*x)])) + 6*B*(b*c - a*d)*n*Log[
(a + b*x)/(c + d*x)]*(3*d*(-(b*c) + a*d)*(a + b*x)*(6*A + 5*B*n + 6*B*Log[e
*((a + b*x)/(c + d*x))^n] - 6*B*n*Log[(a + b*x)/(c + d*x)]) + 6*d^2*(a + b*
x)^2*(6*A + 11*B*n + 6*B*Log[e*((a + b*x)/(c + d*x))^n] - 6*B*n*Log[(a + b*
x)/(c + d*x)]) + 4*(b*c - a*d)^2*(3*A + B*n + 3*B*Log[e*((a + b*x)/(c + d*x
))^n] - 3*B*n*Log[(a + b*x)/(c + d*x)])) - 6*d^3*(a + b*x)^3*(18*A^2 + 66*A
*B*n + 85*B^2*n^2 + 18*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(6*A +
11*B*n)*Log[(a + b*x)/(c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 +
6*B*Log[e*((a + b*x)/(c + d*x))^n]*(6*A + 11*B*n - 6*B*n*Log[(a + b*x)/(c +
 d*x)]))*Log[c + d*x])/((b*c - a*d)^4*g^4*i*(a + b*x)^3)
```

fricas [B] time = 0.88, size = 1910, normalized size = 3.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i),x, a
lgorithm="fricas")
```

```
[Out] -1/108*(36*A^2*b^3*c^3 - 162*A^2*a*b^2*c^2*d + 324*A^2*a^2*b*c*d^2 - 198*A^
2*a^3*d^3 + 36*(B^2*b^3*d^3*n^2*x^3 + 3*B^2*a*b^2*d^3*n^2*x^2 + 3*B^2*a^2*b
*d^3*n^2*x + B^2*a^3*d^3*n^2)*log((b*x + a)/(d*x + c))^3 + (8*B^2*b^3*c^3 -
 81*B^2*a*b^2*c^2*d + 648*B^2*a^2*b*c*d^2 - 575*B^2*a^3*d^3)*n^2 + 6*(18*A^
2*b^3*c*d^2 - 18*A^2*a*b^2*d^3 + 85*(B^2*b^3*c*d^2 - B^2*a*b^2*d^3)*n^2 + 6
6*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*n)*x^2 + 18*(2*B^2*b^3*c^3 - 9*B^2*a*b^2*
c^2*d + 18*B^2*a^2*b*c*d^2 - 11*B^2*a^3*d^3 + 6*(B^2*b^3*c*d^2 - B^2*a*b^2*
d^3)*x^2 - 3*(B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2 + 5*B^2*a^2*b*d^3)*x + 6*(B
^2*b^3*d^3*x^3 + 3*B^2*a*b^2*d^3*x^2 + 3*B^2*a^2*b*d^3*x + B^2*a^3*d^3)*log
((b*x + a)/(d*x + c)))*log(e)^2 + 18*(6*A*B*a^3*d^3*n + (11*B^2*b^3*d^3*n^2
```

```
 + 6*A*B*b^3*d^3*n)*x^3 + (2*B^2*b^3*c^3 - 9*B^2*a*b^2*c^2*d + 18*B^2*a^2*b
*c*d^2)*n^2 + 3*(6*A*B*a*b^2*d^3*n + (2*B^2*b^3*c*d^2 + 9*B^2*a*b^2*d^3)*n^
2)*x^2 + 3*(6*A*B*a^2*b*d^3*n - (B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2 - 6*B^2*
a^2*b*d^3)*n^2)*x)*log((b*x + a)/(d*x + c))^2 + 6*(4*A*B*b^3*c^3 - 27*A*B*a
*b^2*c^2*d + 108*A*B*a^2*b*c*d^2 - 85*A*B*a^3*d^3)*n - 3*(18*A^2*b^3*c^2*d
- 108*A^2*a*b^2*c*d^2 + 90*A^2*a^2*b*d^3 + (19*B^2*b^3*c^2*d - 378*B^2*a*b^
2*c*d^2 + 359*B^2*a^2*b*d^3)*n^2 + 6*(5*A*B*b^3*c^2*d - 54*A*B*a*b^2*c*d^2
+ 49*A*B*a^2*b*d^3)*n)*x + 6*(12*A*B*b^3*c^3 - 54*A*B*a*b^2*c^2*d + 108*A*B
*a^2*b*c*d^2 - 66*A*B*a^3*d^3 + 6*(6*A*B*b^3*c*d^2 - 6*A*B*a*b^2*d^3 + 11*(
B^2*b^3*c*d^2 - B^2*a*b^2*d^3)*n)*x^2 + 18*(B^2*b^3*d^3*n*x^3 + 3*B^2*a*b^2
*d^3*n*x^2 + 3*B^2*a^2*b*d^3*n*x + B^2*a^3*d^3*n)*log((b*x + a)/(d*x + c))^
2 + (4*B^2*b^3*c^3 - 27*B^2*a*b^2*c^2*d + 108*B^2*a^2*b*c*d^2 - 85*B^2*a^3*
d^3)*n - 3*(6*A*B*b^3*c^2*d - 36*A*B*a*b^2*c*d^2 + 30*A*B*a^2*b*d^3 + (5*B^
2*b^3*c^2*d - 54*B^2*a*b^2*c*d^2 + 49*B^2*a^2*b*d^3)*n)*x + 6*(6*A*B*a^3*d^
3 + (11*B^2*b^3*d^3*n + 6*A*B*b^3*d^3)*x^3 + 3*(6*A*B*a*b^2*d^3 + (2*B^2*b^
3*c*d^2 + 9*B^2*a*b^2*d^3)*n)*x^2 + (2*B^2*b^3*c^3 - 9*B^2*a*b^2*c^2*d + 18
*B^2*a^2*b*c*d^2)*n + 3*(6*A*B*a^2*b*d^3 - (B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d
^2 - 6*B^2*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c)))*log(e) + 6*(18*A^2*a^
3*d^3 + (85*B^2*b^3*d^3*n^2 + 66*A*B*b^3*d^3*n + 18*A^2*b^3*d^3)*x^3 + (4*B
^2*b^3*c^3 - 27*B^2*a*b^2*c^2*d + 108*B^2*a^2*b*c*d^2)*n^2 + 3*(18*A^2*a*b^
2*d^3 + (22*B^2*b^3*c*d^2 + 63*B^2*a*b^2*d^3)*n^2 + 6*(2*A*B*b^3*c*d^2 + 9*
A*B*a*b^2*d^3)*n)*x^2 + 6*(2*A*B*b^3*c^3 - 9*A*B*a*b^2*c^2*d + 18*A*B*a^2*b
*c*d^2)*n + 3*(18*A^2*a^2*b*d^3 - (5*B^2*b^3*c^2*d - 54*B^2*a*b^2*c*d^2 - 3
6*B^2*a^2*b*d^3)*n^2 - 6*(A*B*b^3*c^2*d - 6*A*B*a*b^2*c*d^2 - 6*A*B*a^2*b*d
^3)*n)*x)*log((b*x + a)/(d*x + c)))/((b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c
^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*g^4*i*x^3 + 3*(a*b^6*c^4 - 4*a^2*b^
5*c^3*d + 6*a^3*b^4*c^2*d^2 - 4*a^4*b^3*c*d^3 + a^5*b^2*d^4)*g^4*i*x^2 + 3*
(a^2*b^5*c^4 - 4*a^3*b^4*c^3*d + 6*a^4*b^3*c^2*d^2 - 4*a^5*b^2*c*d^3 + a^6*
b*d^4)*g^4*i*x + (a^3*b^4*c^4 - 4*a^4*b^3*c^3*d + 6*a^5*b^2*c^2*d^2 - 4*a^6
*b*c*d^3 + a^7*d^4)*g^4*i)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)^{4}\left(dix+ci\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i),x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i),x)
```

maxima [B] time = 2.98, size = 3445, normalized size = 6.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i),x, a
lgorithm="maxima")
```

```
[Out] -1/6*B^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d
- 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*
g^4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)
*g^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3
)*g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3)*g^4*i
) + 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^
3*b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d
+ 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i))*log(e*(b*x/(d*x + c)
 + a/(d*x + c))^n)^2 - 1/3*A*B*((6*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11
*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4
*c*d^2 - a^3*b^3*d^3)*g^4*i*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^
3*c*d^2 - a^4*b^2*d^3)*g^4*i*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4
*b^2*c*d^2 - a^5*b*d^3)*g^4*i*x + (a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*
c*d^2 - a^6*d^3)*g^4*i) + 6*d^3*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*
a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i) - 6*d^3*log(d*x + c)/((b^
4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i)
)*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/108*((8*b^3*c^3 - 81*a*b^2*c^2
*d + 648*a^2*b*c*d^2 - 575*a^3*d^3 + 36*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*
a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^3 - 36*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 +
 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^3 + 510*(b^3*c*d^2 - a*b^2*d^3)*x^2
- 198*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a
)^2 - 18*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^2*b*d^3*x + 11*a^3*d^3 -
 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a))*
log(d*x + c)^2 - 3*(19*b^3*c^2*d - 378*a*b^2*c*d^2 + 359*a^2*b*d^3)*x + 510
*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a) - 6
*(85*b^3*d^3*x^3 + 255*a*b^2*d^3*x^2 + 255*a^2*b*d^3*x + 85*a^3*d^3 + 18*(b
^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 66
*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a))*lo
g(d*x + c))*n^2/(a^3*b^4*c^4*g^4*i - 4*a^4*b^3*c^3*d*g^4*i + 6*a^5*b^2*c^2*
d^2*g^4*i - 4*a^6*b*c*d^3*g^4*i + a^7*d^4*g^4*i + (b^7*c^4*g^4*i - 4*a*b^6*
c^3*d*g^4*i + 6*a^2*b^5*c^2*d^2*g^4*i - 4*a^3*b^4*c*d^3*g^4*i + a^4*b^3*d^4
*g^4*i)*x^3 + 3*(a*b^6*c^4*g^4*i - 4*a^2*b^5*c^3*d*g^4*i + 6*a^3*b^4*c^2*d^
2*g^4*i - 4*a^4*b^3*c*d^3*g^4*i + a^5*b^2*d^4*g^4*i)*x^2 + 3*(a^2*b^5*c^4*g
^4*i - 4*a^3*b^4*c^3*d*g^4*i + 6*a^4*b^3*c^2*d^2*g^4*i - 4*a^5*b^2*c*d^3*g^
4*i + a^6*b*d^4*g^4*i)*x) + 6*(4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2
 - 85*a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*
d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b
^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*
a*b^2*c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b
*d^3*x + a^3*d^3)*log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*
a^2*b*d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x
 + a^3*d^3)*log(b*x + a))*log(d*x + c))*n*log(e*(b*x/(d*x + c) + a/(d*x + c
))^n)/(a^3*b^4*c^4*g^4*i - 4*a^4*b^3*c^3*d*g^4*i + 6*a^5*b^2*c^2*d^2*g^4*i
- 4*a^6*b*c*d^3*g^4*i + a^7*d^4*g^4*i + (b^7*c^4*g^4*i - 4*a*b^6*c^3*d*g^4*
i + 6*a^2*b^5*c^2*d^2*g^4*i - 4*a^3*b^4*c*d^3*g^4*i + a^4*b^3*d^4*g^4*i)*x^
3 + 3*(a*b^6*c^4*g^4*i - 4*a^2*b^5*c^3*d*g^4*i + 6*a^3*b^4*c^2*d^2*g^4*i -
4*a^4*b^3*c*d^3*g^4*i + a^5*b^2*d^4*g^4*i)*x^2 + 3*(a^2*b^5*c^4*g^4*i - 4*a
^3*b^4*c^3*d*g^4*i + 6*a^4*b^3*c^2*d^2*g^4*i - 4*a^5*b^2*c*d^3*g^4*i + a^6*
b*d^4*g^4*i)*x))*B^2 - 1/18*(4*b^3*c^3 - 27*a*b^2*c^2*d + 108*a^2*b*c*d^2 -
 85*a^3*d^3 + 66*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 18*(b^3*d^3*x^3 + 3*a*b^2*d^
3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(b*x + a)^2 - 18*(b^3*d^3*x^3 + 3*a*b^2
*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(d*x + c)^2 - 3*(5*b^3*c^2*d - 54*a*
b^2*c*d^2 + 49*a^2*b*d^3)*x + 66*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d
^3*x + a^3*d^3)*log(b*x + a) - 6*(11*b^3*d^3*x^3 + 33*a*b^2*d^3*x^2 + 33*a^
2*b*d^3*x + 11*a^3*d^3 - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x +
 a^3*d^3)*log(b*x + a))*log(d*x + c))*A*B*n/(a^3*b^4*c^4*g^4*i - 4*a^4*b^3*
c^3*d*g^4*i + 6*a^5*b^2*c^2*d^2*g^4*i - 4*a^6*b*c*d^3*g^4*i + a^7*d^4*g^4*i
 + (b^7*c^4*g^4*i - 4*a*b^6*c^3*d*g^4*i + 6*a^2*b^5*c^2*d^2*g^4*i - 4*a^3*b
^4*c*d^3*g^4*i + a^4*b^3*d^4*g^4*i)*x^3 + 3*(a*b^6*c^4*g^4*i - 4*a^2*b^5*c^
```

```
3*d*g^4*i + 6*a^3*b^4*c^2*d^2*g^4*i - 4*a^4*b^3*c*d^3*g^4*i + a^5*b^2*d^4*g
^4*i)*x^2 + 3*(a^2*b^5*c^4*g^4*i - 4*a^3*b^4*c^3*d*g^4*i + 6*a^4*b^3*c^2*d^
2*g^4*i - 4*a^5*b^2*c*d^3*g^4*i + a^6*b*d^4*g^4*i)*x) - 1/6*A^2*((6*b^2*d^2
*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 11*a^2*d^2 - 3*(b^2*c*d - 5*a*b*d^2)*x)/((b^
6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*g^4*i*x^3 + 3*(a*b^5
*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)*g^4*i*x^2 + 3*(a^2*
b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*g^4*i*x + (a^3*b^3
*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3)*g^4*i) + 6*d^3*log(b*x +
a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)
*g^4*i) - 6*d^3*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2
- 4*a^3*b*c*d^3 + a^4*d^4)*g^4*i))
```

mupad [B] time = 10.34, size = 1921, normalized size = 3.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^4*(c*i + d*i*x)
),x)
```

```
[Out] ((198*A^2*a^2*d^2 + 36*A^2*b^2*c^2 + 575*B^2*a^2*d^2*n^2 + 8*B^2*b^2*c^2*n^
2 - 126*A^2*a*b*c*d + 510*A*B*a^2*d^2*n + 24*A*B*b^2*c^2*n - 73*B^2*a*b*c*d
*n^2 - 138*A*B*a*b*c*d*n)/(6*(a*d - b*c)) + (x^2*(18*A^2*b^2*d^2 + 85*B^2*b
^2*d^2*n^2 + 66*A*B*b^2*d^2*n))/(a*d - b*c) + (x*(90*A^2*a*b*d^2 - 18*A^2*b
^2*c*d + 359*B^2*a*b*d^2*n^2 - 19*B^2*b^2*c*d*n^2 + 294*A*B*a*b*d^2*n - 30*
A*B*b^2*c*d*n))/(2*(a*d - b*c)))/(x*(54*a^4*b*d^2*g^4*i + 54*a^2*b^3*c^2*g^
4*i - 108*a^3*b^2*c*d*g^4*i) + x^2*(54*a*b^4*c^2*g^4*i + 54*a^3*b^2*d^2*g^4
*i - 108*a^2*b^3*c*d*g^4*i) + x^3*(18*b^5*c^2*g^4*i + 18*a^2*b^3*d^2*g^4*i
- 36*a*b^4*c*d*g^4*i) + 18*a^5*d^2*g^4*i + 18*a^3*b^2*c^2*g^4*i - 36*a^4*b*
c*d*g^4*i) - log(e*((a + b*x)/(c + d*x))^n)^2*((d^3*(11*B^2*n + 6*A*B))/(6*
g^4*i*n*(a*d - b*c)*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)) -
(B^2*d^3*(x*(b*((g^4*i*n*(a*d - b*c)*(3*a*d - b*c))/(6*d^2) + (a*g^4*i*n*(a
*d - b*c))/(3*d)) + (2*a*b*g^4*i*n*(a*d - b*c))/(3*d) + (b*g^4*i*n*(a*d - b
*c)*(3*a*d - b*c))/(3*d^2)) + a*((g^4*i*n*(a*d - b*c)*(3*a*d - b*c))/(6*d^2
) + (a*g^4*i*n*(a*d - b*c))/(3*d)) + (g^4*i*n*(a*d - b*c)*(3*a^2*d^2 + b^2*
c^2 - 3*a*b*c*d))/(3*d^3) + (b^2*g^4*i*n*x^2*(a*d - b*c))/d))/(g^4*i*n*(a*d
 - b*c)*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2)*(a^3*g^4*i + b^
3*g^4*i*x^3 + 3*a^2*b*g^4*i*x + 3*a*b^2*g^4*i*x^2))) - log(e*((a + b*x)/(c
+ d*x))^n)*((6*B^2*a*d*n - 3*B^2*b*c*n + 3*B^2*b*d*n*x)/(x*(9*a^4*b*d^2*g^4
*i + 9*a^2*b^3*c^2*g^4*i - 18*a^3*b^2*c*d*g^4*i) + x^2*(9*a*b^4*c^2*g^4*i +
 9*a^3*b^2*d^2*g^4*i - 18*a^2*b^3*c*d*g^4*i) + x^3*(3*b^5*c^2*g^4*i + 3*a^2
*b^3*d^2*g^4*i - 6*a*b^4*c*d*g^4*i) + 3*a^5*d^2*g^4*i + 3*a^3*b^2*c^2*g^4*i
 - 6*a^4*b*c*d*g^4*i) - (d^3*(11*B^2*n + 6*A*B)*(x*(b*((a*g^4*i*n*(a*d - b*
c)^3)/d + (g^4*i*n*(a*d - b*c)^3*(3*a*d - b*c))/(2*d^2)) + (2*a*b*g^4*i*n*(
a*d - b*c)^3)/d + (b*g^4*i*n*(a*d - b*c)^3*(3*a*d - b*c))/d^2) + a*((a*g^4*
i*n*(a*d - b*c)^3)/d + (g^4*i*n*(a*d - b*c)^3*(3*a*d - b*c))/(2*d^2)) + (g^
4*i*n*(a*d - b*c)^3*(3*a^2*d^2 + b^2*c^2 - 3*a*b*c*d))/d^3 + (3*b^2*g^4*i*n
*x^2*(a*d - b*c)^3)/d))/(3*g^4*i*n*(a*d - b*c)*(a^3*d^3 - b^3*c^3 + 3*a*b^2
*c^2*d - 3*a^2*b*c*d^2)*(x*(9*a^4*b*d^2*g^4*i + 9*a^2*b^3*c^2*g^4*i - 18*a^
3*b^2*c*d*g^4*i) + x^2*(9*a*b^4*c^2*g^4*i + 9*a^3*b^2*d^2*g^4*i - 18*a^2*b^
3*c*d*g^4*i) + x^3*(3*b^5*c^2*g^4*i + 3*a^2*b^3*d^2*g^4*i - 6*a*b^4*c*d*g^4
*i) + 3*a^5*d^2*g^4*i + 3*a^3*b^2*c^2*g^4*i - 6*a^4*b*c*d*g^4*i))) + (d^3*a
tan((d^3*(A^2 + (85*B^2*n^2)/18 + (11*A*B*n)/3)*(18*a^4*d^4*g^4*i - 18*b^4*
c^4*g^4*i + 36*a*b^3*c^3*d*g^4*i - 36*a^3*b*c*d^3*g^4*i)*1i)/(g^4*i*(a*d -
b*c)^4*(18*A^2*d^3 + 85*B^2*d^3*n^2 + 66*A*B*d^3*n)) + (b*d^4*x*(A^2 + (85*
B^2*n^2)/18 + (11*A*B*n)/3)*(a^3*d^3*g^4*i - b^3*c^3*g^4*i + 3*a*b^2*c^2*d*
g^4*i - 3*a^2*b*c*d^2*g^4*i)*36i)/(g^4*i*(a*d - b*c)^4*(18*A^2*d^3 + 85*B^2
*d^3*n^2 + 66*A*B*d^3*n)))*(A^2 + (85*B^2*n^2)/18 + (11*A*B*n)/3)*2i)/(g^4*
i*(a*d - b*c)^4) - (B^2*d^3*log(e*((a + b*x)/(c + d*x))^n)^3)/(3*g^4*i*n*(a
*d - b*c)*(a^3*d^3 - b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**4/(d*i*x+c*i),x)
[Out] Timed out
```

3.194 $\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ci+dix)^2}\,dx$

Optimal. Leaf size=770

$$\frac{b^3g^3(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2d^4i^2}-\frac{6bBg^3n(bc-ad)^2\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^4i^2}-\frac{3bg^3(bc-ad}{}$$

```
[Out] 2*A*B*(-a*d+b*c)^2*g^3*n*(b*x+a)/d^3/i^2/(d*x+c)-2*B^2*(-a*d+b*c)^2*g^3*n^2
*(b*x+a)/d^3/i^2/(d*x+c)+2*B^2*(-a*d+b*c)^2*g^3*n*(b*x+a)*ln(e*((b*x+a)/(d*
x+c))^n)/d^3/i^2/(d*x+c)-b*B*(-a*d+b*c)*g^3*n*(b*x+a)*(A+B*ln(e*((b*x+a)/(d
*x+c))^n))/d^3/i^2-3*b*(-a*d+b*c)*g^3*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n
))^2/d^3/i^2-(-a*d+b*c)^2*g^3*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d^3
/i^2/(d*x+c)+1/2*b^3*g^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d^4/i^
2-6*b*B*(-a*d+b*c)^2*g^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/
(d*x+c))/d^4/i^2-3*b*(-a*d+b*c)^2*g^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2*ln(
(-a*d+b*c)/b/(d*x+c))/d^4/i^2+b*B^2*(-a*d+b*c)^2*g^3*n^2*ln(d*x+c)/d^4/i^2+
b*B*(-a*d+b*c)^2*g^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln(1-b*(d*x+c)/d/(b*
x+a))/d^4/i^2-6*b*B^2*(-a*d+b*c)^2*g^3*n^2*polylog(2,d*(b*x+a)/b/(d*x+c))/d
^4/i^2-6*b*B*(-a*d+b*c)^2*g^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*polylog(2,d
*(b*x+a)/b/(d*x+c))/d^4/i^2-b*B^2*(-a*d+b*c)^2*g^3*n^2*polylog(2,b*(d*x+c)/
d/(b*x+a))/d^4/i^2+6*b*B^2*(-a*d+b*c)^2*g^3*n^2*polylog(3,d*(b*x+a)/b/(d*x+
c))/d^4/i^2
```

Rubi [B] time = 6.01, antiderivative size = 2384, normalized size of antiderivative = 3.10, number of steps used = 112, number of rules used = 28, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.622, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 2486, 31, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x
)^2,x]
```

```
[Out] -((A*b^2*B*(b*c - a*d)*g^3*n*x)/(d^3*i^2)) + (2*B^2*(b*c - a*d)^3*g^3*n^2)/
(d^4*i^2*(c + d*x)) + (2*b*B^2*(b*c - a*d)^2*g^3*n^2*Log[a + b*x])/(d^4*i^2
) + (a^2*b*B^2*g^3*n^2*Log[a + b*x]^2)/(2*d^2*i^2) + (a*b*B^2*(2*b*c - 3*a*
d)*g^3*n^2*Log[a + b*x]^2)/(d^3*i^2) + (b*B^2*(b*c - a*d)^2*g^3*n^2*Log[a +
 b*x]^2)/(d^4*i^2) - (b*B^2*(b*c - a*d)*g^3*n*(a + b*x)*Log[e*((a + b*x)/(c
 + d*x))^n])/(d^3*i^2) - (2*B*(b*c - a*d)^3*g^3*n*(A + B*Log[e*((a + b*x)/(
c + d*x))^n]))/(d^4*i^2*(c + d*x)) - (a^2*b*B*g^3*n*Log[a + b*x]*(A + B*Log
[e*((a + b*x)/(c + d*x))^n]))/(d^2*i^2) - (2*a*b*B*(2*b*c - 3*a*d)*g^3*n*Lo
g[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^3*i^2) - (2*b*B*(b*c
- a*d)^2*g^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^4*i^
2) - (b^2*(2*b*c - 3*a*d)*g^3*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(
d^3*i^2) + (b^3*g^3*x^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*d^2*i^
2) + ((b*c - a*d)^3*g^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(d^4*i^2*
(c + d*x)) - (b*B^2*(b*c - a*d)^2*g^3*n^2*Log[c + d*x])/(d^4*i^2) - (6*A*b*
B*(b*c - a*d)^2*g^3*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4*
i^2) - (b^3*B^2*c^2*g^3*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])
/(d^4*i^2) - (2*b^2*B^2*c*(2*b*c - 3*a*d)*g^3*n^2*Log[-((d*(a + b*x))/(b*c
- a*d))]*Log[c + d*x])/(d^4*i^2) - (2*b*B^2*(b*c - a*d)^2*g^3*n^2*Log[-((d*
(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4*i^2) - (3*b*B^2*(b*c - a*d)^2*g
^3*Log[(a + b*x)^n]^2*Log[c + d*x])/(d^4*i^2) + (b^3*B*c^2*g^3*n*(A + B*Log
[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(d^4*i^2) + (2*b^2*B*c*(2*b*c -
```

```
3*a*d)*g^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(d^4*i^2)
 + (2*b*B*(b*c - a*d)^2*g^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c
+ d*x])/(d^4*i^2) + (3*b*(b*c - a*d)^2*g^3*(A + B*Log[e*((a + b*x)/(c + d*x
))^n])^2*Log[c + d*x])/(d^4*i^2) + (3*A*b*B*(b*c - a*d)^2*g^3*n*Log[c + d*x
]^2)/(d^4*i^2) + (b^3*B^2*c^2*g^3*n^2*Log[c + d*x]^2)/(2*d^4*i^2) + (b^2*B^
2*c*(2*b*c - 3*a*d)*g^3*n^2*Log[c + d*x]^2)/(d^4*i^2) + (b*B^2*(b*c - a*d)^
2*g^3*n^2*Log[c + d*x]^2)/(d^4*i^2) - (3*b*B^2*(b*c - a*d)^2*g^3*n^2*Log[a
+ b*x]*Log[c + d*x]^2)/(d^4*i^2) + (3*b*B^2*(b*c - a*d)^2*g^3*n*Log[e*((a +
 b*x)/(c + d*x))^n]*Log[c + d*x]^2)/(d^4*i^2) + (b*B^2*(b*c - a*d)^2*g^3*n^
2*Log[c + d*x]^3)/(d^4*i^2) - (a^2*b*B^2*g^3*n^2*Log[a + b*x]*Log[(b*(c + d
*x))/(b*c - a*d)])/(d^2*i^2) - (2*a*b*B^2*(2*b*c - 3*a*d)*g^3*n^2*Log[a + b
*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) - (2*b*B^2*(b*c - a*d)^2*g^3*
n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4*i^2) + (3*b*B^2*(b*c
- a*d)^2*g^3*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4*i^2) -
 (6*b*B^2*(b*c - a*d)^2*g^3*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)]
)/(d^4*i^2) - (3*b*B^2*(b*c - a*d)^2*g^3*Log[a + b*x]*Log[(c + d*x)^(-n)]^2
)/(d^4*i^2) + (3*b*B^2*(b*c - a*d)^2*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*
Log[(c + d*x)^(-n)]^2)/(d^4*i^2) + (6*b*B^2*(b*c - a*d)^2*g^3*n*Log[-((d*(a
 + b*x))/(b*c - a*d))]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c
 + d*x))^n] + Log[(c + d*x)^(-n)]))/(d^4*i^2) - (a^2*b*B^2*g^3*n^2*PolyLog[
2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*i^2) - (2*a*b*B^2*(2*b*c - 3*a*d)*g^
3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i^2) - (2*b*B^2*(b*c -
 a*d)^2*g^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^4*i^2) + (6*b*
B^2*(b*c - a*d)^2*g^3*n*Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c -
a*d))])/(d^4*i^2) - (6*A*b*B*(b*c - a*d)^2*g^3*n*PolyLog[2, (b*(c + d*x))/(
b*c - a*d)])/(d^4*i^2) - (b^3*B^2*c^2*g^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c
 - a*d)])/(d^4*i^2) - (2*b^2*B^2*c*(2*b*c - 3*a*d)*g^3*n^2*PolyLog[2, (b*(c
 + d*x))/(b*c - a*d)])/(d^4*i^2) - (2*b*B^2*(b*c - a*d)^2*g^3*n^2*PolyLog[2
, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^2) - (6*b*B^2*(b*c - a*d)^2*g^3*n*Log[
(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^2) + (6*b*B^2
*(b*c - a*d)^2*g^3*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + L
og[(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^2) - (6*b
*B^2*(b*c - a*d)^2*g^3*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/(d^4*i
^2) - (6*b*B^2*(b*c - a*d)^2*g^3*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])
/(d^4*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2486

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.), x_Symbol] :> Simp[((a + b*x)*Log[e*(f*(a + b*x)^p*(c + d*x)^
q)^r]^s)/b, x] + Dist[(q*r*s*(b*c - a*d))/b, Int[Log[e*(f*(a + b*x)^p*(c +
d*x)^q)^r]^(s - 1)/(c + d*x), x], x] /; FreeQ[{a, b, c, d, e, f, p, q, r, s
}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(194c+194dx)^2}\,dx = \int\left(-\frac{b^2(2bc-3ad)g^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{37636d^3} + \frac{b^3g^3x\left(A+B\log\right.}{3763}\right.$$

$$= \frac{\left(b^3g^3\right)\int x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\,dx}{37636d^2} - \frac{\left(b^2(2bc-3ad)g^3\right)\int\left(A\right.}{3763}$$

$$= -\frac{b^2(2bc-3ad)g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{37636d^3} + \frac{b^3g^3x^2\left(A+B\log\right.}{75272d}$$

$$= -\frac{b^2(2bc-3ad)g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{37636d^3} + \frac{b^3g^3x^2\left(A+B\log\right.}{75272d}$$

$$= -\frac{b^2(2bc-3ad)g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{37636d^3} + \frac{b^3g^3x^2\left(A+B\log\right.}{75272d}$$

$$= -\frac{b^2(2bc-3ad)g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{37636d^3} + \frac{b^3g^3x^2\left(A+B\log\right.}{75272d}$$

$$= -\frac{Ab^2B(bc-ad)g^3nx}{37636d^3} - \frac{B(bc-ad)^3g^3n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{18818d^4(c+dx)} -$$

$$= -\frac{Ab^2B(bc-ad)g^3nx}{37636d^3} - \frac{bB^2(bc-ad)g^3n(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{37636d^3} -$$

$$= -\frac{Ab^2B(bc-ad)g^3nx}{37636d^3} - \frac{bB^2(bc-ad)g^3n(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{37636d^3} -$$

$$= -\frac{Ab^2B(bc-ad)g^3nx}{37636d^3} + \frac{B^2(bc-ad)^3g^3n^2}{18818d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3n^2\log}{18818d^4}$$

$$= -\frac{Ab^2B(bc-ad)g^3nx}{37636d^3} + \frac{B^2(bc-ad)^3g^3n^2}{18818d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3n^2\log}{18818d^4}$$

$$= -\frac{Ab^2B(bc-ad)g^3nx}{37636d^3} + \frac{B^2(bc-ad)^3g^3n^2}{18818d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3n^2\log}{18818d^4}$$

$$= -\frac{Ab^2B(bc-ad)g^3nx}{37636d^3} + \frac{B^2(bc-ad)^3g^3n^2}{18818d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3n^2\log}{18818d^4}$$

$$= -\frac{Ab^2B(bc-ad)g^3nx}{37636d^3} + \frac{B^2(bc-ad)^3g^3n^2}{18818d^4(c+dx)} + \frac{bB^2(bc-ad)^2g^3n^2\log}{18818d^4}$$

$$= -\frac{Ab^2B(bc-ad)g^3nx}{} + \frac{B^2(bc-ad)^3g^3n^2}{} + \frac{bB^2(bc-ad)^2g^3n^2\log}{}$$

Mathematica [B] time = 8.91, size = 4312, normalized size = 5.60

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i +
 d*i*x)^2,x]
```

```
[Out] -((b^2*(2*b*c - 3*a*d)*g^3*x*(A + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log
[(a + b*x)/(c + d*x)]))^2)/(d^3*i^2)) + (b^3*g^3*x^2*(A + B*(Log[e*((a + b*
x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]))^2)/(2*d^2*i^2) + (A^2*b^3*c
^3*g^3 - 3*a*A^2*b^2*c^2*d*g^3 + 3*a^2*A^2*b*c*d^2*g^3 - a^3*A^2*d^3*g^3 +
2*A*b^3*B*c^3*g^3*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*
x)]) - 6*a*A*b^2*B*c^2*d*g^3*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b
*x)/(c + d*x)]) + 6*a^2*A*b*B*c*d^2*g^3*(Log[e*((a + b*x)/(c + d*x))^n] - n
*Log[(a + b*x)/(c + d*x)]) - 2*a^3*A*B*d^3*g^3*(Log[e*((a + b*x)/(c + d*x))
^n] - n*Log[(a + b*x)/(c + d*x)]) + b^3*B^2*c^3*g^3*(Log[e*((a + b*x)/(c +
d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2 - 3*a*b^2*B^2*c^2*d*g^3*(Log[e*((a
 + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2 + 3*a^2*b*B^2*c*d^2*g
^3*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2 - a^3*B^
2*d^3*g^3*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)/
(d^4*i^2*(c + d*x)) + (3*b*(b*c - a*d)^2*g^3*(A + B*(Log[e*((a + b*x)/(c +
d*x))^n] - n*Log[(a + b*x)/(c + d*x)]))^2*Log[c + d*x])/(d^4*i^2) + (2*a^3*
B*g^3*n*(A + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]
))*(((c/d + x)*(Log[c/d + x] + Log[c/d + x]^2))/((c + d*x)^2*Log[c/d + x])
+ ((d*(a/b + x)*Log[a/b + x])/((-c + (a*d)/b)^2*(1 - (d*(a/b + x))/(-c + (a
*d)/b))) + Log[1 - (d*(a/b + x))/(-c + (a*d)/b)]/(-c + (a*d)/b))/d - (-Log[
a/b + x] + Log[c/d + x] + Log[a/(c + d*x) + (b*x)/(c + d*x)])/(d*(c + d*x))
))/i^2 + (2*b^3*B*g^3*n*(A + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a +
 b*x)/(c + d*x)]))*((-2*c*(a/b + x)*(-1 + Log[a/b + x]))/d^3 + (2*c*(c/d +
x)*(-1 + Log[c/d + x]))/d^3 - (3*c^2*Log[c/d + x]^2)/(2*d^4) - (c^3*(1 + Lo
g[c/d + x]))/(d^4*(c + d*x)) + ((a*x)/(2*b) - x^2/4 + (x^2*Log[a/b + x])/2
- (a^2*Log[a + b*x])/(2*b^2))/d^2 - ((c*x)/(2*d) - x^2/4 + (x^2*Log[c/d + x
])/2 - (c^2*Log[c + d*x])/(2*d^2))/d^2 - (c^3*(-(Log[a/b + x]/(d*(c + d*x))
) + (b*(Log[a + b*x]/(b*c - a*d) - Log[c + d*x]/(b*c - a*d)))/d))/d^3 + ((-
4*c*d*x + d^2*x^2 + (2*c^3)/(c + d*x) + 6*c^2*Log[c + d*x])*(-Log[a/b + x]
+ Log[c/d + x] + Log[a/(c + d*x) + (b*x)/(c + d*x)]))/(2*d^4) + (3*c^2*((Lo
g[a/b + x]*Log[(c + d*x)/(c - (a*d)/b)])/d + PolyLog[2, (b*d*(a/b + x))/(-(
b*c) + a*d)]/d))/d^3))/i^2 + (6*a*b^2*B*g^3*n*(A + B*(Log[e*((a + b*x)/(c +
 d*x))^n] - n*Log[(a + b*x)/(c + d*x)]))*(((a/b + x)*(-1 + Log[a/b + x]))/d
^2 - ((c/d + x)*(-1 + Log[c/d + x]))/d^2 + (c*Log[c/d + x]^2)/d^3 + (c^2*(1
 + Log[c/d + x]))/(d^3*(c + d*x)) + (c^2*(-(Log[a/b + x]/(d*(c + d*x))) + (
b*(Log[a + b*x]/(b*c - a*d) - Log[c + d*x]/(b*c - a*d)))/d))/d^2 + ((d*x -
c^2/(c + d*x) - 2*c*Log[c + d*x])*(-Log[a/b + x] + Log[c/d + x] + Log[a/(c
+ d*x) + (b*x)/(c + d*x)]))/d^3 - (2*c*((Log[a/b + x]*Log[(c + d*x)/(c - (a
*d)/b)])/d + PolyLog[2, (b*d*(a/b + x))/(-(b*c) + a*d)]/d))/d^2))/i^2 + (6*
a^2*b*B*g^3*n*(A + B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c +
 d*x)]))*(-1/2*Log[c/d + x]^2/d^2 - (c*(1 + Log[c/d + x]))/(d^2*(c + d*x))
- (c*(-(Log[a/b + x]/(d*(c + d*x))) + (b*(Log[a + b*x]/(b*c - a*d) - Log[c
+ d*x]/(b*c - a*d)))/d))/d + ((c/(c + d*x) + Log[c + d*x])*(-Log[a/b + x] +
 Log[c/d + x] + Log[a/(c + d*x) + (b*x)/(c + d*x)]))/d^2 + ((Log[a/b + x]*L
og[(c + d*x)/(c - (a*d)/b)])/d + PolyLog[2, (b*d*(a/b + x))/(-(b*c) + a*d)]
/d)/d))/i^2 - (a^3*B^2*g^3*n^2*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x]
- 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(
a + b*x)/(c + d*x)] + (b*c - a*d)*Log[(a + b*x)/(c + d*x)]^2 - 2*b*(c + d*x
)*Log[c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*
c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))
/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*
(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[
```

```
(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))))/(d
*(b*c - a*d)*i^2*(c + d*x)) + (3*a*b^2*B^2*g^3*n^2*((d*(a + b*x)*Log[(a + b
*x)/(c + d*x)]^2)/b - (c^2*Log[(a + b*x)/(c + d*x)]^2)/(c + d*x) + 2*c*Log[
(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - (c^2*(2*b*c - 2*a*d
 + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*
b*(c + d*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[c + d
*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)]
 + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d
)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log[(b*c -
 a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)
/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*
(c + d*x)) - ((b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*
x))/(-(b*c) + a*d)] - 2*Log[(a + b*x)/(c + d*x)] + Log[(b*c - a*d)/(b*c + b
*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/b + 4*c*(Log[(a + b*x)/
(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x
))/(b*(c + d*x))])))/(d^3*i^2) + (b^3*B^2*g^3*n^2*(d^2*x^2*Log[(a + b*x)/(c
 + d*x)]^2 - (4*c*d*(a + b*x)*Log[(a + b*x)/(c + d*x)]^2)/b + (2*c^3*Log[(a
 + b*x)/(c + d*x)]^2)/(c + d*x) - 6*c^2*Log[(a + b*x)/(c + d*x)]^2*Log[(b*c
 - a*d)/(b*c + b*d*x)] - (2*d*(b*c - a*d)*(a + b*x)*Log[(a + b*x)/(c + d*x)
] + 2*a^2*d^2*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 2*(b*c - a*d)^2*Log[c
 + d*x] + 2*b^2*c^2*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)]
 - a^2*d^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)])
- 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) - b^2*c^2*(Log[(b*c - a*d)/(b
*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c +
b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/b^2 + (2*c^3*(2*b*c -
2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)]
 - 2*b*(c + d*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[
c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*
d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c
- a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log[(
b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c -
 a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c -
a*d)*(c + d*x)) + (4*c*(b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(
d*(a + b*x))/(-(b*c) + a*d)] - 2*Log[(a + b*x)/(c + d*x)] + Log[(b*c - a*d)
/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/b - 12*c^2*(Lo
g[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3,
 (d*(a + b*x))/(b*(c + d*x))])))/(2*d^4*i^2) + (3*a^2*b*B^2*g^3*n^2*((c*Log
[(a + b*x)/(c + d*x)]^2)/(c + d*x) - Log[(a + b*x)/(c + d*x)]^2*Log[(b*c -
a*d)/(b*c + b*d*x)] - 2*Log[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(
b*(c + d*x))] + (c*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a
*d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(a + b*x)/(c
+ d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x
)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x]
 - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) +
 a*d)]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/
(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*
x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*x)) + 2*PolyLog[3, (d*(a + b*x))/(b
*(c + d*x))]))/(d^2*i^2)
```

fricas [F] time = 0.94, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2b^3g^3x^3 + 3\,A^2ab^2g^3x^2 + 3\,A^2a^2bg^3x + A^2a^3g^3 + \left(B^2b^3g^3x^3 + 3\,B^2ab^2g^3x^2 + 3\,B^2a^2bg^3x + B^2a^3g^3\right)\mathrm{l}}{d^2i^2x^2 + 2\,cdi^2x +}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
 algorithm="fricas")
```

```
[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a
^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a
^3*g^3)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^3*g^3*x^3 + 3*A*B*a*b^2
*g^3*x^2 + 3*A*B*a^2*b*g^3*x + A*B*a^3*g^3)*log(e*((b*x + a)/(d*x + c))^n))
/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{3} \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(dix+ci\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)
```

```
[Out] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
 algorithm="maxima")
```

```
[Out] 2*A*B*a^3*g^3*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*
i^2) - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) + 1/2*(2*c^3/(d^5*i^2*x + c*d^
4*i^2) + 6*c^2*log(d*x + c)/(d^4*i^2) + (d*x^2 - 4*c*x)/(d^3*i^2))*A^2*b^3*
g^3 - 3*A^2*a*b^2*(c^2/(d^4*i^2*x + c*d^3*i^2) - x/(d^2*i^2) + 2*c*log(d*x
+ c)/(d^3*i^2))*g^3 + 3*A^2*a^2*b*g^3*(c/(d^3*i^2*x + c*d^2*i^2) + log(d*x
+ c)/(d^2*i^2)) - 2*A*B*a^3*g^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^2
*i^2*x + c*d*i^2) - A^2*a^3*g^3/(d^2*i^2*x + c*d*i^2) + 1/2*(B^2*b^3*d^3*g^
3*x^3 - 3*(b^3*c*d^2*g^3 - 2*a*b^2*d^3*g^3)*B^2*x^2 - 2*(2*b^3*c^2*d*g^3 -
3*a*b^2*c*d^2*g^3)*B^2*x + 2*(b^3*c^3*g^3 - 3*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d
^2*g^3 - a^3*d^3*g^3)*B^2 + 6*((b^3*c^2*d*g^3 - 2*a*b^2*c*d^2*g^3 + a^2*b*d
^3*g^3)*B^2*x + (b^3*c^3*g^3 - 2*a*b^2*c^2*d*g^3 + a^2*b*c*d^2*g^3)*B^2)*lo
g(d*x + c))*log((d*x + c)^n)^2/(d^5*i^2*x + c*d^4*i^2) - integrate(-(B^2*a^
3*d^3*g^3*log(e)^2 + (B^2*b^3*d^3*g^3*log(e)^2 + 2*A*B*b^3*d^3*g^3*log(e))*
x^3 + 3*(B^2*a*b^2*d^3*g^3*log(e)^2 + 2*A*B*a*b^2*d^3*g^3*log(e))*x^2 + (B^
2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a
^3*d^3*g^3)*log((b*x + a)^n)^2 + 3*(B^2*a^2*b*d^3*g^3*log(e)^2 + 2*A*B*a^2*
b*d^3*g^3*log(e))*x + 2*(B^2*a^3*d^3*g^3*log(e) + (B^2*b^3*d^3*g^3*log(e) +
 A*B*b^3*d^3*g^3)*x^3 + 3*(B^2*a*b^2*d^3*g^3*log(e) + A*B*a*b^2*d^3*g^3)*x^
2 + 3*(B^2*a^2*b*d^3*g^3*log(e) + A*B*a^2*b*d^3*g^3)*x)*log((b*x + a)^n) -
((2*A*B*b^3*d^3*g^3 + (g^3*n + 2*g^3*log(e))*B^2*b^3*d^3)*x^3 + 2*(b^3*c^3*
g^3*n - 3*a*b^2*c^2*d*g^3*n + 3*a^2*b*c*d^2*g^3*n - (g^3*n - g^3*log(e))*a^
3*d^3)*B^2 + 3*(2*A*B*a*b^2*d^3*g^3 - (b^3*c*d^2*g^3*n - 2*(g^3*n + g^3*log
(e))*a*b^2*d^3)*B^2)*x^2 + 2*(3*A*B*a^2*b*d^3*g^3 - (2*b^3*c^2*d*g^3*n - 3*
a*b^2*c*d^2*g^3*n - 3*a^2*b*d^3*g^3*log(e))*B^2)*x + 6*((b^3*c^2*d*g^3*n -
```

```
2*a*b^2*c*d^2*g^3*n + a^2*b*d^3*g^3*n)*B^2*x + (b^3*c^3*g^3*n - 2*a*b^2*c^2
*d*g^3*n + a^2*b*c*d^2*g^3*n)*B^2)*log(d*x + c) + 2*(B^2*b^3*d^3*g^3*x^3 +
3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*log((b*x
 + a)^n))*log((d*x + c)^n))/(d^5*i^2*x^2 + 2*c*d^4*i^2*x + c^2*d^3*i^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a g + b g x)^3 \left(A + B \ln\left(e \left(\frac{a+b x}{c+d x}\right)^n\right)\right)^2}{(c i + d i x)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^2,x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**2
,x)
```

```
[Out] Timed out
```

3.195 $\int \frac{(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ci+dix)^2}\,dx$

Optimal. Leaf size=500

$$\frac{4bBg^2n(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^3i^2}+\frac{2bg^2(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{d^3i^2}+\cdots$$

```
[Out] -2*A*B*(-a*d+b*c)*g^2*n*(b*x+a)/d^2/i^2/(d*x+c)+2*B^2*(-a*d+b*c)*g^2*n^2*(b
*x+a)/d^2/i^2/(d*x+c)-2*B^2*(-a*d+b*c)*g^2*n*(b*x+a)*ln(e*((b*x+a)/(d*x+c))
^n)/d^2/i^2/(d*x+c)+b*g^2*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d^2/i^2
+(-a*d+b*c)*g^2*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d^2/i^2/(d*x+c)+2
*b*B*(-a*d+b*c)*g^2*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/b/(d*x+
c))/d^3/i^2+2*b*(-a*d+b*c)*g^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2*ln((-a*d+b
*c)/b/(d*x+c))/d^3/i^2+2*b*B^2*(-a*d+b*c)*g^2*n^2*polylog(2,d*(b*x+a)/b/(d*
x+c))/d^3/i^2+4*b*B*(-a*d+b*c)*g^2*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*polylo
g(2,d*(b*x+a)/b/(d*x+c))/d^3/i^2-4*b*B^2*(-a*d+b*c)*g^2*n^2*polylog(3,d*(b*
x+a)/b/(d*x+c))/d^3/i^2
```

Rubi [B] time = 4.98, antiderivative size = 1807, normalized size of antiderivative = 3.61, number of steps used = 89, number of rules used = 26, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.578, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x
)^2,x]
```

```
[Out] (-2*B^2*(b*c - a*d)^2*g^2*n^2)/(d^3*i^2*(c + d*x)) - (2*b*B^2*(b*c - a*d)*g
^2*n^2*Log[a + b*x])/(d^3*i^2) - (a*b*B^2*g^2*n^2*Log[a + b*x]^2)/(d^2*i^2)
 - (b*B^2*(b*c - a*d)*g^2*n^2*Log[a + b*x]^2)/(d^3*i^2) + (2*B*(b*c - a*d)^
2*g^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^3*i^2*(c + d*x)) + (2*a*
b*B*g^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*i^2) +
(2*b*B*(b*c - a*d)*g^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
))/(d^3*i^2) + (b^2*g^2*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(d^2*i^
2) - ((b*c - a*d)^2*g^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(d^3*i^2*
(c + d*x)) + (2*b*B^2*(b*c - a*d)*g^2*n^2*Log[c + d*x])/(d^3*i^2) + (4*A*b*
B*(b*c - a*d)*g^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^3*i^
2) + (2*b^2*B^2*c*g^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(
d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*L
og[c + d*x])/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*Log[(a + b*x)^n]^2*Log[c
+ d*x])/(d^3*i^2) - (2*b^2*B*c*g^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
*Log[c + d*x])/(d^3*i^2) - (2*b*B*(b*c - a*d)*g^2*n*(A + B*Log[e*((a + b*x)
/(c + d*x))^n])*Log[c + d*x])/(d^3*i^2) - (2*b*(b*c - a*d)*g^2*(A + B*Log[e
*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/(d^3*i^2) - (2*A*b*B*(b*c - a*d)
*g^2*n*Log[c + d*x]^2)/(d^3*i^2) - (b^2*B^2*c*g^2*n^2*Log[c + d*x]^2)/(d^3*
i^2) - (b*B^2*(b*c - a*d)*g^2*n^2*Log[c + d*x]^2)/(d^3*i^2) + (2*b*B^2*(b*c
 - a*d)*g^2*n^2*Log[a + b*x]*Log[c + d*x]^2)/(d^3*i^2) - (2*b*B^2*(b*c - a*
d)*g^2*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2)/(d^3*i^2) - (2*b*B^
2*(b*c - a*d)*g^2*n^2*Log[c + d*x]^3)/(3*d^3*i^2) + (2*a*b*B^2*g^2*n^2*Log[
a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) + (2*b*B^2*(b*c - a*d)*g
^2*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) - (2*b*B^2*(b
*c - a*d)*g^2*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^3*i^2)
+ (4*b*B^2*(b*c - a*d)*g^2*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)])
```

```
/(d^3*i^2) + (2*b*B^2*(b*c - a*d)*g^2*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/(
d^3*i^2) - (2*b*B^2*(b*c - a*d)*g^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(
c + d*x)^(-n)]^2)/(d^3*i^2) - (4*b*B^2*(b*c - a*d)*g^2*n*Log[-((d*(a + b*x)
)/(b*c - a*d))]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x)
)^n] + Log[(c + d*x)^(-n)]))/(d^3*i^2) + (2*a*b*B^2*g^2*n^2*PolyLog[2, -((d
*(a + b*x))/(b*c - a*d))])/(d^2*i^2) + (2*b*B^2*(b*c - a*d)*g^2*n^2*PolyLog
[2, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i^2) - (4*b*B^2*(b*c - a*d)*g^2*n*L
og[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i^2) + (4*A*
b*B*(b*c - a*d)*g^2*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) + (2
*b^2*B^2*c*g^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) + (2*b*
B^2*(b*c - a*d)*g^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^2) +
(4*b*B^2*(b*c - a*d)*g^2*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*
c - a*d)])/(d^3*i^2) - (4*b*B^2*(b*c - a*d)*g^2*n*(Log[(a + b*x)^n] - Log[e
*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(
b*c - a*d)])/(d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2*n^2*PolyLog[3, -((d*(a +
b*x))/(b*c - a*d))])/(d^3*i^2) + (4*b*B^2*(b*c - a*d)*g^2*n^2*PolyLog[3, (b
*(c + d*x))/(b*c - a*d)])/(d^3*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
```

```
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
```

```
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(195c+195dx)^2}\,dx=\int\left(\frac{b^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38025d^2}+\frac{(-bc+ad)^2g^2\left(A+B\log\left(e\left(\cdots\right.\right.\right.}{38025d^2(c+dx)^2}\right.$$

$$=\frac{\left(b^2g^2\right)\int\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\,dx}{38025d^2}-\frac{\left(2b(bc-ad)g^2\right)\int\frac{\left(A+B\log\left(\cdots\right.\right.}{c\cdots}}{38025d^2}$$

$$=\frac{b^2g^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38025d^2}-\frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\cdots\right.\right.\right.}{38025d^3(c+dx)}$$

$$=\frac{b^2g^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38025d^2}-\frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\cdots\right.\right.\right.}{38025d^3(c+dx)}$$

$$=\frac{b^2g^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38025d^2}-\frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\cdots\right.\right.\right.}{38025d^3(c+dx)}$$

$$=\frac{b^2g^2x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38025d^2}-\frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\cdots\right.\right.\right.}{38025d^3(c+dx)}$$

$$=\frac{2B(bc-ad)^2g^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38025d^3(c+dx)}+\frac{2abBg^2n\log(a+bx)\left(\cdots\right.}{3802\cdots}$$

$$=\frac{2B(bc-ad)^2g^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38025d^3(c+dx)}+\frac{2abBg^2n\log(a+bx)\left(\cdots\right.}{3802\cdots}$$

$$=\frac{2B(bc-ad)^2g^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38025d^3(c+dx)}+\frac{2abBg^2n\log(a+bx)\left(\cdots\right.}{3802\cdots}$$

$$=-\frac{2B^2(bc-ad)^2g^2n^2}{38025d^3(c+dx)}-\frac{2bB^2(bc-ad)g^2n^2\log(a+bx)}{38025d^3}+\frac{2B(bc-a\cdots}{\cdots}$$

$$=-\frac{2B^2(bc-ad)^2g^2n^2}{38025d^3(c+dx)}-\frac{2bB^2(bc-ad)g^2n^2\log(a+bx)}{38025d^3}-\frac{abB^2g^2n^2\cdots}{380\cdots}$$

$$=-\frac{2B^2(bc-ad)^2g^2n^2}{38025d^3(c+dx)}-\frac{2bB^2(bc-ad)g^2n^2\log(a+bx)}{38025d^3}-\frac{abB^2g^2n^2\cdots}{380\cdots}$$

$$=-\frac{2B^2(bc-ad)^2g^2n^2}{38025d^3(c+dx)}-\frac{2bB^2(bc-ad)g^2n^2\log(a+bx)}{38025d^3}-\frac{abB^2g^2n^2\cdots}{380\cdots}$$

$$=-\frac{2B^2(bc-ad)^2g^2n^2}{38025d^3(c+dx)}-\frac{2bB^2(bc-ad)g^2n^2\log(a+bx)}{38025d^3}-\frac{abB^2g^2n^2\cdots}{380\cdots}$$

$$=-\frac{2B^2(bc-ad)^2g^2n^2}{\cdots}-\frac{2bB^2(bc-ad)g^2n^2\log(a+bx)}{\cdots}-\frac{abB^2g^2n^2\cdots}{\cdots}$$

Mathematica [B] time = 5.03, size = 2196, normalized size = 4.39

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i +
 d*i*x)^2,x]
```

```
[Out] (g^2*(b^2*d*x*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c
+ d*x)])^2 - ((b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log
[(a + b*x)/(c + d*x)])^2)/(c + d*x) - 2*b*(b*c - a*d)*(A + B*Log[e*((a + b*
x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2*Log[c + d*x] + (2*a^2*B*
d^2*n*(-A - B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(a + b*x)/(c + d*x)]
)*(b*c - a*d + b*(c + d*x)*Log[a/b + x] + (-(b*c) + a*d)*Log[(a + b*x)/(c +
 d*x)] - b*c*Log[(b*(c + d*x))/(b*c - a*d)] - b*d*x*Log[(b*(c + d*x))/(b*c
- a*d)]))/((-(b*c) + a*d)*(c + d*x)) + 2*a*b*B*d*n*(A + B*Log[e*((a + b*x)/
(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(-Log[c/d + x]^2 + 2*Log[c/d
+ x]*Log[c + d*x] + 2*(-(c/(c + d*x)) + (b*c*Log[a + b*x])/(-(b*c) + a*d) +
 (b*c*Log[c + d*x])/(b*c - a*d) - Log[a/b + x]*Log[c + d*x] + Log[(a + b*x)
/(c + d*x)]*(c/(c + d*x) + Log[c + d*x]) + Log[a/b + x]*Log[(b*(c + d*x))/(
b*c - a*d)]) + 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*B*n*(A +
 B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(d*(a/b +
 x)*(-1 + Log[a/b + x]) - (c^2*Log[a/b + x])/(c + d*x) - (c + d*x)*(-1 + Lo
g[c/d + x]) + c*Log[c/d + x]^2 + (c^2*(1 + Log[c/d + x]))/(c + d*x) + (b*c^
2*(Log[a + b*x] - Log[c + d*x]))/(b*c - a*d) + (-Log[a/b + x] + Log[c/d + x
] + Log[(a + b*x)/(c + d*x)])*(d*x - c^2/(c + d*x) - 2*c*Log[c + d*x]) - 2*
c*(Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(
-(b*c) + a*d)])) - (a^2*B^2*d^2*n^2*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a +
b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*
Log[(a + b*x)/(c + d*x)] + (b*c - a*d)*Log[(a + b*x)/(c + d*x)]^2 - 2*b*(c
+ d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d
)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c +
d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c +
d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] +
 Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])
))/((b*c - a*d)*(c + d*x)) + b^2*B^2*n^2*((d*(a + b*x)*Log[(a + b*x)/(c + d
*x)]^2)/b - (c^2*Log[(a + b*x)/(c + d*x)]^2)/(c + d*x) + 2*c*Log[(a + b*x)/
(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - (c^2*(2*b*c - 2*a*d + 2*b*(c
+ d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x
)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*
(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c +
d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*Po
lyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c
 + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*
d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*x))
 - ((b*c - a*d)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c
) + a*d)] - 2*Log[(a + b*x)/(c + d*x)] + Log[(b*c - a*d)/(b*c + b*d*x)]) -
2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))/b + 4*c*(Log[(a + b*x)/(c + d*x)]
*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] - PolyLog[3, (d*(a + b*x))/(b*(c +
 d*x))])) + 2*a*b*B^2*d*n^2*((c*Log[(a + b*x)/(c + d*x)]^2)/(c + d*x) - Log
[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - 2*Log[(a + b*x)/(c
 + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + (c*(2*b*c - 2*a*d + 2*b*
(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c +
d*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2
*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c
 + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2
*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log[(b*c - a*d)/(
b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c +
 b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*
x)) + 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])))/(d^3*i^2)
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2b^2g^2x^2 + 2\,A^2abg^2x + A^2a^2g^2 + \left(B^2b^2g^2x^2 + 2\,B^2abg^2x + B^2a^2g^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2 + 2\left(ABb^2g^2x^2\right.}{d^2i^2x^2 + 2\,cdi^2x + c^2i^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
 algorithm="fricas")
```

```
[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^
2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*
B*b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^
n))/(d^2*i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^2 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2}{(dix + ci)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)
```

```
[Out] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,ABa^2g^2n\left(\frac{1}{d^2i^2x + cdi^2} + \frac{b\log\left(bx+a\right)}{\left(bcd - ad^2\right)i^2} - \frac{b\log\left(dx+c\right)}{\left(bcd - ad^2\right)i^2}\right) - A^2b^2\left(\frac{c^2}{d^4i^2x + cd^3i^2} - \frac{x}{d^2i^2} + \frac{2\,c\log\left(dx+c\right)}{d^3i^2}\right)g^2 + 2\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x,
 algorithm="maxima")
```

```
[Out] 2*A*B*a^2*g^2*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*
i^2) - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) - A^2*b^2*(c^2/(d^4*i^2*x + c*
d^3*i^2) - x/(d^2*i^2) + 2*c*log(d*x + c)/(d^3*i^2))*g^2 + 2*A^2*a*b*g^2*(c
/(d^3*i^2*x + c*d^2*i^2) + log(d*x + c)/(d^2*i^2)) - 2*A*B*a^2*g^2*log(e*(b
*x/(d*x + c) + a/(d*x + c))^n)/(d^2*i^2*x + c*d*i^2) - A^2*a^2*g^2/(d^2*i^2
*x + c*d*i^2) + (B^2*b^2*d^2*g^2*x^2 + B^2*b^2*c*d*g^2*x - (b^2*c^2*g^2 - 2
*a*b*c*d*g^2 + a^2*d^2*g^2)*B^2 - 2*((b^2*c*d*g^2 - a*b*d^2*g^2)*B^2*x + (b
^2*c^2*g^2 - a*b*c*d*g^2)*B^2)*log(d*x + c))*log((d*x + c)^n)^2/(d^4*i^2*x
+ c*d^3*i^2) - integrate(-(B^2*a^2*d^2*g^2*log(e)^2 + (B^2*b^2*d^2*g^2*log(
e)^2 + 2*A*B*b^2*d^2*g^2*log(e))*x^2 + (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2
```

```
*g^2*x + B^2*a^2*d^2*g^2)*log((b*x + a)^n)^2 + 2*(B^2*a*b*d^2*g^2*log(e)^2
+ 2*A*B*a*b*d^2*g^2*log(e))*x + 2*(B^2*a^2*d^2*g^2*log(e) + (B^2*b^2*d^2*g^
2*log(e) + A*B*b^2*d^2*g^2)*x^2 + 2*(B^2*a*b*d^2*g^2*log(e) + A*B*a*b*d^2*g
^2)*x)*log((b*x + a)^n) + 2*((b^2*c^2*g^2*n - 2*a*b*c*d*g^2*n + (g^2*n - g^
2*log(e))*a^2*d^2)*B^2 - (A*B*b^2*d^2*g^2 + (g^2*n + g^2*log(e))*B^2*b^2*d^
2)*x^2 - (2*A*B*a*b*d^2*g^2 + (b^2*c*d*g^2*n + 2*a*b*d^2*g^2*log(e))*B^2)*x
 + 2*((b^2*c*d*g^2*n - a*b*d^2*g^2*n)*B^2*x + (b^2*c^2*g^2*n - a*b*c*d*g^2*
n)*B^2)*log(d*x + c) - (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2
*d^2*g^2)*log((b*x + a)^n))*log((d*x + c)^n))/(d^4*i^2*x^2 + 2*c*d^3*i^2*x
+ c^2*d^2*i^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)^2\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2}{\left(c\,i+d\,i\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^2,x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**2
,x)
```

```
[Out] Timed out
```

3.196 $\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ci+dix)^2}\,dx$

Optimal. Leaf size=282

$$-\frac{2bBgn\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2i^2}-\frac{bg\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{d^2i^2}-\frac{g(a+bx)\left(B\log\left(e\left(\frac{a+b}{c+d}\right.\right.\right.}{di^2(c+dx)}$$

```
[Out] 2*A*B*g*n*(b*x+a)/d/i^2/(d*x+c)-2*B^2*g*n^2*(b*x+a)/d/i^2/(d*x+c)+2*B^2*g*n
*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/d/i^2/(d*x+c)-g*(b*x+a)*(A+B*ln(e*((b*x+
a)/(d*x+c))^n))^2/d/i^2/(d*x+c)-b*g*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2*ln((-
a*d+b*c)/b/(d*x+c))/d^2/i^2-2*b*B*g*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*polyl
og(2,d*(b*x+a)/b/(d*x+c))/d^2/i^2+2*b*B^2*g*n^2*polylog(3,d*(b*x+a)/b/(d*x+
c))/d^2/i^2
```

Rubi [B] time = 4.17, antiderivative size = 1157, normalized size of antiderivative = 4.10, number of steps used = 69, number of rules used = 25, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.581, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

$$\frac{bB^2gn^2\log^3(c+dx)}{3d^2i^2}+\frac{bB^2gn^2\log^2(c+dx)}{d^2i^2}+\frac{AbBgn\log^2(c+dx)}{d^2i^2}-\frac{bB^2gn^2\log(a+bx)\log^2(c+dx)}{d^2i^2}+\frac{bB^2gn\log\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^
2,x]
```

```
[Out] (2*B^2*(b*c - a*d)*g*n^2)/(d^2*i^2*(c + d*x)) + (2*b*B^2*g*n^2*Log[a + b*x]
)/(d^2*i^2) + (b*B^2*g*n^2*Log[a + b*x]^2)/(d^2*i^2) - (2*B*(b*c - a*d)*g*n
*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*i^2*(c + d*x)) - (2*b*B*g*n*L
og[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*i^2) + ((b*c - a*d
)*g*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(d^2*i^2*(c + d*x)) - (2*b*B^
2*g*n^2*Log[c + d*x])/(d^2*i^2) - (2*A*b*B*g*n*Log[-((d*(a + b*x))/(b*c - a
*d))]*Log[c + d*x])/(d^2*i^2) - (2*b*B^2*g*n^2*Log[-((d*(a + b*x))/(b*c - a
*d))]*Log[c + d*x])/(d^2*i^2) - (b*B^2*g*Log[(a + b*x)^n]^2*Log[c + d*x])/(
d^2*i^2) + (2*b*B*g*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/
(d^2*i^2) + (b*g*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/(d^
2*i^2) + (A*b*B*g*n*Log[c + d*x]^2)/(d^2*i^2) + (b*B^2*g*n^2*Log[c + d*x]^2
)/(d^2*i^2) - (b*B^2*g*n^2*Log[a + b*x]*Log[c + d*x]^2)/(d^2*i^2) + (b*B^2*
g*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2)/(d^2*i^2) + (b*B^2*g*n^2
*Log[c + d*x]^3)/(3*d^2*i^2) - (2*b*B^2*g*n^2*Log[a + b*x]*Log[(b*(c + d*x)
)/(b*c - a*d)])/(d^2*i^2) + (b*B^2*g*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(
b*c - a*d)])/(d^2*i^2) - (2*b*B^2*g*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*
x)^(-n)])/(d^2*i^2) - (b*B^2*g*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/(d^2*i^2
) + (b*B^2*g*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-n)]^2)/(d^2*
i^2) + (2*b*B^2*g*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]*(Log[(a
+ b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)]))/(d^2*i^2
) - (2*b*B^2*g*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*i^2) + (2
*b*B^2*g*n*Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*
i^2) - (2*A*b*B*g*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) - (2*b
*B^2*g*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) - (2*b*B^2*g*n*
Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) + (2*b
*B^2*g*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)
^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*i^2) - (2*b*B^2*g*n^2*P
```

```
olyLog[3, -((d*(a + b*x))/(b*c - a*d))])/(d^2*i^2) - (2*b*B^2*g*n^2*PolyLog
[3, (b*(c + d*x))/(b*c - a*d)])/(d^2*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
```

```
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
```

```
b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(196c+196dx)^2}\,dx = \int \left(\frac{(-bc+ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38416d(c+dx)^2} + \frac{bg\left(A+B\log\left(e\left(\frac{a+}{c+}\right.\right.\right.}{38416d(c+d}\right.$$

$$= \frac{(bg)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}dx}{38416d} - \frac{((bc-ad)g)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(c+dx)^2}d}{38416d}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38416d^2(c+dx)} + \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{38416d^2}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38416d^2(c+dx)} + \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{38416d^2}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38416d^2(c+dx)} + \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{38416d^2}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38416d^2(c+dx)} + \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{38416d^2}$$

$$= -\frac{B(bc-ad)gn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19208d^2(c+dx)} - \frac{bBgn\log(a+bx)\left(A+\right.}{19208}$$

$$= -\frac{B(bc-ad)gn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19208d^2(c+dx)} - \frac{bBgn\log(a+bx)\left(A+\right.}{19208}$$

$$= -\frac{B(bc-ad)gn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19208d^2(c+dx)} - \frac{bBgn\log(a+bx)\left(A+\right.}{19208}$$

$$= \frac{B^2(bc-ad)gn^2}{19208d^2(c+dx)} + \frac{bB^2gn^2\log(a+bx)}{19208d^2} - \frac{B(bc-ad)gn\left(A+B\,\mathrm{lo}\right.}{19208d^2(c+}$$

$$= \frac{B^2(bc-ad)gn^2}{19208d^2(c+dx)} + \frac{bB^2gn^2\log(a+bx)}{19208d^2} + \frac{bB^2gn^2\log^2(a+bx)}{38416d^2} -$$

$$= \frac{B^2(bc-ad)gn^2}{19208d^2(c+dx)} + \frac{bB^2gn^2\log(a+bx)}{19208d^2} + \frac{bB^2gn^2\log^2(a+bx)}{38416d^2} -$$

$$= \frac{B^2(bc-ad)gn^2}{19208d^2(c+dx)} + \frac{bB^2gn^2\log(a+bx)}{19208d^2} + \frac{bB^2gn^2\log^2(a+bx)}{38416d^2} -$$

$$= \frac{B^2(bc-ad)gn^2}{19208d^2(c+dx)} + \frac{bB^2gn^2\log(a+bx)}{19208d^2} + \frac{bB^2gn^2\log^2(a+bx)}{38416d^2} -$$

$$= \frac{B^2(bc-ad)gn^2}{\ldots} + \frac{bB^2gn^2\log(a+bx)}{\ldots} + \frac{bB^2gn^2\log^2(a+bx)}{\ldots}$$

Mathematica [B] time = 1.99, size = 1261, normalized size = 4.47

$$g\left(-\frac{aB^2d\left((bc-ad)\log^2\left(\frac{a+bx}{c+dx}\right)-2(bc-ad)\log\left(\frac{a+bx}{c+dx}\right)-2b(c+dx)\log(a+bx)\log\left(\frac{a+bx}{c+dx}\right)-2b(c+dx)\log\left(\frac{bc-ad}{bc+bdx}\right)\log\left(\frac{a+bx}{c+dx}\right)+2bc-2ad+2b(c+dx)\log(a+bx)-\right.}{(}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d
*i*x)^2,x]
```

```
[Out] (g*(((b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/
(c + d*x)])^2)/(c + d*x) + b*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Lo
g[(a + b*x)/(c + d*x)])^2*Log[c + d*x] + (2*a*B*d*n*(-A - B*Log[e*((a + b*x
)/(c + d*x))^n] + B*n*Log[(a + b*x)/(c + d*x)])*(b*c - a*d + b*(c + d*x)*Lo
g[a/b + x] + (-(b*c) + a*d)*Log[(a + b*x)/(c + d*x)] - b*c*Log[(b*(c + d*x)
)/(b*c - a*d)] - b*d*x*Log[(b*(c + d*x))/(b*c - a*d)]))/((-(b*c) + a*d)*(c
+ d*x)) + b*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(
c + d*x)])*(-Log[c/d + x]^2 + 2*Log[c/d + x]*Log[c + d*x] + 2*(-(c/(c + d*x
)) + (b*c*Log[a + b*x])/(-(b*c) + a*d) + (b*c*Log[c + d*x])/(b*c - a*d) - L
og[a/b + x]*Log[c + d*x] + Log[(a + b*x)/(c + d*x)]*(c/(c + d*x) + Log[c +
d*x]) + Log[a/b + x]*Log[(b*(c + d*x))/(b*c - a*d)]) + 2*PolyLog[2, (d*(a +
 b*x))/(-(b*c) + a*d)]) - (a*B^2*d*n^2*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a
 + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*
x]*Log[(a + b*x)/(c + d*x)] + (b*c - a*d)*Log[(a + b*x)/(c + d*x)]^2 - 2*b*
(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c -
a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c
 + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c
 + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)
] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d
)])))/((b*c - a*d)*(c + d*x)) + b*B^2*n^2*((c*Log[(a + b*x)/(c + d*x)]^2)/(
c + d*x) - Log[(a + b*x)/(c + d*x)]^2*Log[(b*c - a*d)/(b*c + b*d*x)] - 2*Lo
g[(a + b*x)/(c + d*x)]*PolyLog[2, (d*(a + b*x))/(b*(c + d*x))] + (c*(2*b*c
- 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x
)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Lo
g[c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c +
b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*
c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log
[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c
 - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c
- a*d)*(c + d*x)) + 2*PolyLog[3, (d*(a + b*x))/(b*(c + d*x))])))/(d^2*i^2)
```

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2bgx + A^2ag + \left(B^2bgx + B^2ag\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2 + 2\left(ABbgx + ABag\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}{d^2i^2x^2 + 2\,cdi^2x + c^2i^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, a
lgorithm="fricas")
```

```
[Out] integral((A^2*b*g*x + A^2*a*g + (B^2*b*g*x + B^2*a*g)*log(e*((b*x + a)/(d*x
 + c))^n)^2 + 2*(A*B*b*g*x + A*B*a*g)*log(e*((b*x + a)/(d*x + c))^n))/(d^2*
i^2*x^2 + 2*c*d*i^2*x + c^2*i^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(dix+ci\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)
```

```
[Out] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2\,ABagn\left(\frac{1}{d^2i^2x+cdi^2}+\frac{b\log\left(bx+a\right)}{\left(bcd-ad^2\right)i^2}-\frac{b\log\left(dx+c\right)}{\left(bcd-ad^2\right)i^2}\right)+A^2bg\left(\frac{c}{d^3i^2x+cd^2i^2}+\frac{\log\left(dx+c\right)}{d^2i^2}\right)-\frac{2\,ABag\log\left(e\right.}{d^2i^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, a
lgorithm="maxima")
```

```
[Out] 2*A*B*a*g*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2)
 - b*log(d*x + c)/((b*c*d - a*d^2)*i^2)) + A^2*b*g*(c/(d^3*i^2*x + c*d^2*i^
2) + log(d*x + c)/(d^2*i^2)) - 2*A*B*a*g*log(e*(b*x/(d*x + c) + a/(d*x + c)
)^n)/(d^2*i^2*x + c*d*i^2) - A^2*a*g/(d^2*i^2*x + c*d*i^2) + ((b*c*g - a*d*
g)*B^2 + (B^2*b*d*g*x + B^2*b*c*g)*log(d*x + c))*log((d*x + c)^n)^2/(d^3*i^
2*x + c*d^2*i^2) - integrate(-(B^2*a*d*g*log(e)^2 + (B^2*b*d*g*x + B^2*a*d*
g)*log((b*x + a)^n)^2 + (B^2*b*d*g*log(e)^2 + 2*A*B*b*d*g*log(e))*x + 2*(B^
2*a*d*g*log(e) + (B^2*b*d*g*log(e) + A*B*b*d*g)*x)*log((b*x + a)^n) - 2*((b
*c*g*n - (g*n - g*log(e))*a*d)*B^2 + (B^2*b*d*g*log(e) + A*B*b*d*g)*x + (B^
2*b*d*g*n*x + B^2*b*c*g*n)*log(d*x + c) + (B^2*b*d*g*x + B^2*a*d*g)*log((b*
x + a)^n))*log((d*x + c)^n))/(d^3*i^2*x^2 + 2*c*d^2*i^2*x + c^2*d*i^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^2}{{\left(c\,i+d\,i\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^
2,x)
```

```
[Out] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^
2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.197 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ci+dix)^2}\,dx$

Optimal. Leaf size=163

$$\frac{(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{i^2(c+dx)(bc-ad)}-\frac{2ABn(a+bx)}{i^2(c+dx)(bc-ad)}-\frac{2B^2n(a+bx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{i^2(c+dx)(bc-ad)}+\frac{2B^2n^2(a+bx)}{i^2(c+dx)(bc-ad)}$$

```
[Out] -2*A*B*n*(b*x+a)/(-a*d+b*c)/i^2/(d*x+c)+2*B^2*n^2*(b*x+a)/(-a*d+b*c)/i^2/(d
*x+c)-2*B^2*n*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)/i^2/(d*x+c)+(b*x
+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/i^2/(d*x+c)
```

Rubi [C] time = 0.76, antiderivative size = 514, normalized size of antiderivative = 3.15, number of steps used = 24, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {2525, 12, 2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{2bB^2n^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{di^2(bc-ad)}+\frac{2bB^2n^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{di^2(bc-ad)}+\frac{2bBn\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{di^2(bc-ad)}+\frac{2Bn\left(B\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x)^2,x]
```

```
[Out] (-2*B^2*n^2)/(d*i^2*(c + d*x)) - (2*b*B^2*n^2*Log[a + b*x])/(d*(b*c - a*d)*
i^2) - (b*B^2*n^2*Log[a + b*x]^2)/(d*(b*c - a*d)*i^2) + (2*B*n*(A + B*Log[e
*((a + b*x)/(c + d*x))^n]))/(d*i^2*(c + d*x)) + (2*b*B*n*Log[a + b*x]*(A +
B*Log[e*((a + b*x)/(c + d*x))^n]))/(d*(b*c - a*d)*i^2) - (A + B*Log[e*((a +
 b*x)/(c + d*x))^n])^2/(d*i^2*(c + d*x)) + (2*b*B^2*n^2*Log[c + d*x])/(d*(b
*c - a*d)*i^2) + (2*b*B^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x
])/(d*(b*c - a*d)*i^2) - (2*b*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Lo
g[c + d*x])/(d*(b*c - a*d)*i^2) - (b*B^2*n^2*Log[c + d*x]^2)/(d*(b*c - a*d)
*i^2) + (2*b*B^2*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d*(b*c -
 a*d)*i^2) + (2*b*B^2*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d*(b*c
 - a*d)*i^2) + (2*b*B^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d*(b*c
- a*d)*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(197c+197dx)^2}\,dx = -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38809d(c+dx)} + \frac{(2Bn)\int \frac{(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{197(a+bx)(c+dx)^2}\,dx}{197d}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38809d(c+dx)} + \frac{(2B(bc-ad)n)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)(c+dx)^2}\,dx}{38809d}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38809d(c+dx)} + \frac{(2B(bc-ad)n)\int \left(\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(bc-ad)^2(a+bx)} - \frac{d\left(A+B\log\left(\cdots\right.\right.}{(bc-ad)\cdots}\cdots\right.}{38809d\cdots}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{38809d(c+dx)} - \frac{(2Bn)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^2}\,dx}{38809} - \frac{(2bBn)\int \frac{A+B\log\left(e\left(\cdots\right.\right.}{c+dx\cdots}}{38809(bc-\cdots}$$

$$= \frac{2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c+dx)} + \frac{2bBn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(bc-ad)} - \cdots$$

$$= \frac{2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c+dx)} + \frac{2bBn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(bc-ad)} - \cdots$$

$$= \frac{2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c+dx)} + \frac{2bBn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(bc-ad)} - \cdots$$

$$= -\frac{2B^2n^2}{38809d(c+dx)} - \frac{2bB^2n^2\log(a+bx)}{38809d(bc-ad)} + \frac{2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{38809d(c+dx)} + \frac{2bB\cdots}{\cdots}$$

$$= -\frac{2B^2n^2}{38809d(c+dx)} - \frac{2bB^2n^2\log(a+bx)}{38809d(bc-ad)} - \frac{bB^2n^2\log^2(a+bx)}{38809d(bc-ad)} + \frac{2Bn\left(A+B\log\cdots\right.}{38809d\cdots}$$

$$= -\frac{2B^2n^2}{38809d(c+dx)} - \frac{2bB^2n^2\log(a+bx)}{38809d(bc-ad)} - \frac{bB^2n^2\log^2(a+bx)}{38809d(bc-ad)} + \frac{2Bn\left(A+B\log\cdots\right.}{38809d\cdots}$$

Mathematica [C] time = 0.45, size = 331, normalized size = 2.03

$$\frac{Bn\left(2(bc-ad)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2b(c+dx)\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-2b(c+dx)\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-bBn(c+dx)\left(\log(a+bx)\left(\log(\cdots\right.\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x)^2,x]
```

```
[Out] (-(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + (B*n*(2*(b*c - a*d)*(A + B*Log
[e*((a + b*x)/(c + d*x))^n]) + 2*b*(c + d*x)*Log[a + b*x]*(A + B*Log[e*((a
+ b*x)/(c + d*x))^n]) - 2*b*(c + d*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
)*Log[c + d*x] - 2*B*n*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*
Log[c + d*x]) - b*B*n*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c +
 d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + b*B*n*
(c + d*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x
```

```
] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d))/(d*i^2*(c + d*x
))
```

fricas [A] time = 0.75, size = 263, normalized size = 1.61

$$-\frac{A^2bc - A^2ad + 2\left(B^2bc - B^2ad\right)n^2 + \left(B^2bc - B^2ad\right)\log(e)^2 - \left(B^2bdn^2x + B^2adn^2\right)\log\left(\frac{bx+a}{dx+c}\right)^2 - 2\left(ABbc - A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, algorithm="fr
icas")
```

```
[Out] -(A^2*b*c - A^2*a*d + 2*(B^2*b*c - B^2*a*d)*n^2 + (B^2*b*c - B^2*a*d)*log(e
)^2 - (B^2*b*d*n^2*x + B^2*a*d*n^2)*log((b*x + a)/(d*x + c))^2 - 2*(A*B*b*c
 - A*B*a*d)*n + 2*(A*B*b*c - A*B*a*d - (B^2*b*c - B^2*a*d)*n - (B^2*b*d*n*x
 + B^2*a*d*n)*log((b*x + a)/(d*x + c)))*log(e) + 2*(B^2*a*d*n^2 - A*B*a*d*n
 + (B^2*b*d*n^2 - A*B*b*d*n)*x)*log((b*x + a)/(d*x + c)))/((b*c*d^2 - a*d^3
)*i^2*x + (b*c^2*d - a*c*d^2)*i^2)
```

giac [A] time = 4.78, size = 156, normalized size = 0.96

$$-\left(\frac{(bx+a)B^2n^2\log\left(\frac{bx+a}{dx+c}\right)^2}{dx+c} - \frac{2\left(B^2n^2 - ABn - B^2n\right)(bx+a)\log\left(\frac{bx+a}{dx+c}\right)}{dx+c} + \frac{\left(2B^2n^2 - 2ABn - 2B^2n + A^2 + 2\right.}{dx+c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, algorithm="gi
ac")
```

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

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{(dix+ci)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^2,x)
```

maxima [B] time = 0.92, size = 428, normalized size = 2.63

$$2ABn\left(\frac{1}{d^2i^2x+cdi^2} + \frac{b\log(bx+a)}{\left(bcd-ad^2\right)i^2} - \frac{b\log(dx+c)}{\left(bcd-ad^2\right)i^2}\right) + \left(2n\left(\frac{1}{d^2i^2x+cdi^2} + \frac{b\log(bx+a)}{\left(bcd-ad^2\right)i^2} - \frac{b\log(dx+c)}{\left(bcd-ad^2\right)i^2}\right)\mathrm{lo}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^2,x, algorithm="ma
xima")
```

```
[Out] 2*A*B*n*(1/(d^2*i^2*x + c*d*i^2) + b*log(b*x + a)/((b*c*d - a*d^2)*i^2) - b
*log(d*x + c)/((b*c*d - a*d^2)*i^2)) + (2*n*(1/(d^2*i^2*x + c*d*i^2) + b*lo
g(b*x + a)/((b*c*d - a*d^2)*i^2) - b*log(d*x + c)/((b*c*d - a*d^2)*i^2))*lo
g(e*(b*x/(d*x + c) + a/(d*x + c))^n) - ((b*d*x + b*c)*log(b*x + a)^2 + (b*d
*x + b*c)*log(d*x + c)^2 + 2*b*c - 2*a*d + 2*(b*d*x + b*c)*log(b*x + a) - 2
*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))*log(d*x + c))*n^2/(b*c^2*d*i^2
- a*c*d^2*i^2 + (b*c*d^2*i^2 - a*d^3*i^2)*x))*B^2 - B^2*log(e*(b*x/(d*x + c
) + a/(d*x + c))^n)^2/(d^2*i^2*x + c*d*i^2) - 2*A*B*log(e*(b*x/(d*x + c) +
a/(d*x + c))^n)/(d^2*i^2*x + c*d*i^2) - A^2/(d^2*i^2*x + c*d*i^2)
```

mupad [**B**] time = 6.27, size = 237, normalized size = 1.45

$$\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\left(\frac{2\,B^2\,n}{x\,d^2\,i^2+c\,d\,i^2}-\frac{2\,A\,B}{x\,d^2\,i^2+c\,d\,i^2}\right)-\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2\left(\frac{B^2}{d\,\left(c\,i^2+d\,i^2\,x\right)}+\frac{B^2\,b}{d\,i^2\,\left(a\,d-b\,c\right)}\right)-\frac{A^2-}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/(c*i + d*i*x)^2,x)
```

```
[Out] log(e*((a + b*x)/(c + d*x))^n)*((2*B^2*n)/(d^2*i^2*x + c*d*i^2) - (2*A*B)/(
d^2*i^2*x + c*d*i^2)) - log(e*((a + b*x)/(c + d*x))^n)^2*(B^2/(d*(c*i^2 + d
*i^2*x)) + (B^2*b)/(d*i^2*(a*d - b*c))) - (A^2 + 2*B^2*n^2 - 2*A*B*n)/(d^2*
i^2*x + c*d*i^2) + (B*b*n*atan(((2*b*d*x + (a*d^2*i^2 + b*c*d*i^2)/(d*i^2))
*1i)/(a*d - b*c))*(A - B*n)*4i)/(d*i^2*(a*d - b*c))
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A^2}{c^2+2cdx+d^2x^2}\,dx+\int \frac{B^2\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)^2}{c^2+2cdx+d^2x^2}\,dx+\int \frac{2AB\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)}{c^2+2cdx+d^2x^2}\,dx}{i^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**2,x)
```

```
[Out] (Integral(A**2/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(B**2*log(e*(a/(c
 + d*x) + b*x/(c + d*x))**n)**2/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral
(2*A*B*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)/(c**2 + 2*c*d*x + d**2*x**2)
, x))/i**2
```

3.198 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)(ci+dix)^2}\,dx$

Optimal. Leaf size=231

$$\frac{b\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^3}{3Bgi^2n(bc-ad)^2}-\frac{d(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{gi^2(c+dx)(bc-ad)^2}+\frac{2ABdn(a+bx)}{gi^2(c+dx)(bc-ad)^2}+\frac{2B^2dn(a+bx)\log\left(e\right.}{gi^2(c+dx)(bc-\right.}$$

```
[Out] 2*A*B*d*n*(b*x+a)/(-a*d+b*c)^2/g/i^2/(d*x+c)-2*B^2*d*n^2*(b*x+a)/(-a*d+b*c)
^2/g/i^2/(d*x+c)+2*B^2*d*n*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^2/g
/i^2/(d*x+c)-d*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^2/g/i^2
/(d*x+c)+1/3*b*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^2/g/i^2/n
```

Rubi [C] time = 6.11, antiderivative size = 1803, normalized size of antiderivative = 7.81, number of steps used = 83, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.689, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 12, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2525, 44, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*i*x)^2
),x]
```

```
[Out] (2*B^2*n^2)/((b*c - a*d)*g*i^2*(c + d*x)) + (2*b*B^2*n^2*Log[a + b*x])/((b*
c - a*d)^2*g*i^2) - (A*b*B*n*Log[a + b*x]^2)/((b*c - a*d)^2*g*i^2) + (b*B^2
*n^2*Log[a + b*x]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[-((b*c - a*d)/(d*(a
 + b*x)))]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2
*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^2*g*i^2) - (2*
B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)*g*i^2*(c + d*x)) -
 (2*b*B*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)
^2*g*i^2) + (A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((b*c - a*d)*g*i^2*(c
+ d*x)) + (b*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c -
 a*d)^2*g*i^2) - (2*b*B^2*n^2*Log[c + d*x])/((b*c - a*d)^2*g*i^2) + (2*A*b*
B*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^2*g*i^2) -
 (2*b*B^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^
2*g*i^2) + (b*B^2*Log[(a + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)^2*g*i^2) +
(2*b*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^
2*g*i^2) - (b*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/((b*c
- a*d)^2*g*i^2) - (A*b*B*n*Log[c + d*x]^2)/((b*c - a*d)^2*g*i^2) + (b*B^2*n
^2*Log[c + d*x]^2)/((b*c - a*d)^2*g*i^2) + (b*B^2*n^2*Log[a + b*x]*Log[c +
d*x]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*n*Log[e*((a + b*x)/(c + d*x))^n]*Log
[c + d*x]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*n^2*Log[c + d*x]^3)/(3*(b*c - a
*d)^2*g*i^2) + (2*A*b*B*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*
c - a*d)^2*g*i^2) - (2*b*B^2*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)
])/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c
 - a*d)])/((b*c - a*d)^2*g*i^2) + (2*b*B^2*n*Log[a + b*x]*Log[c + d*x]*Log[
(c + d*x)^(-n)])/((b*c - a*d)^2*g*i^2) + (b*B^2*Log[a + b*x]*Log[(c + d*x)^
(-n)]^2)/((b*c - a*d)^2*g*i^2) - (b*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*L
og[(c + d*x)^(-n)]^2)/((b*c - a*d)^2*g*i^2) - (2*b*B^2*n*Log[-((d*(a + b*x)
)/(b*c - a*d))]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x)
)^n] + Log[(c + d*x)^(-n)]))/((b*c - a*d)^2*g*i^2) + (2*A*b*B*n*PolyLog[2,
-((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*n^2*PolyLog
[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g*i^2) - (2*b*B^2*n*Log[(
a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g*i^2)
```

```
 + (2*A*b*B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2)
- (2*b*B^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2)
 + (2*b*B^2*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((
b*c - a*d)^2*g*i^2) - (2*b*B^2*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c +
d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*
c - a*d)^2*g*i^2) + (2*b*B^2*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1
+ (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^2*g*i^2) + (2*b*B^2*n^2*PolyLog[
3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*g*i^2) + (2*b*B^2*n^2*Poly
Log[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^2*g*i^2) + (2*b*B^2*n^2*Pol
yLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^2*g*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
```

```
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
```

```
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(198c+198dx)^2(ag+bgx)}\,dx = \int \left(\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc-ad)^2 g(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc-ad)g(c+dx)^2} - \frac{bd\left(A+\right.}{39204(b}\right.$$

$$= \frac{b^2\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}\,dx}{39204(bc-ad)^2 g} - \frac{(bd)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}\,dx}{39204(bc-ad)^2 g} - \frac{d\int \frac{\left(A+B\log\left(e\right.\right.}{(c+dx}}{39204(bc}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc-ad)^2 g} - \frac{b\left(A\right.}{}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc-ad)^2 g} - \frac{b\left(A\right.}{}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc-ad)^2 g} - \frac{b\left(A\right.}{}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc-ad)g(c+dx)} + \frac{b\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39204(bc-ad)^2 g} - \frac{b\left(A\right.}{}$$

$$= -\frac{Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19602(bc-ad)g(c+dx)} - \frac{bBn\log(a+bx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19602(bc-ad)^2 g} -$$

$$= -\frac{bB^2\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39204(bc-ad)^2 g} - \frac{Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{19602(bc-ad)g(c+dx)} - \frac{bBn\log}{}$$

$$= -\frac{bB^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39204(bc-ad)^2 g} - \frac{bB^2\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39204(bc-ad)^2 g} -$$

$$= \frac{B^2n^2}{19602(bc-ad)g(c+dx)} + \frac{bB^2n^2\log(a+bx)}{19602(bc-ad)^2 g} - \frac{AbBn\log^2(a+bx)}{39204(bc-ad)^2 g} - \frac{bB}{}$$

$$= \frac{B^2n^2}{19602(bc-ad)g(c+dx)} + \frac{bB^2n^2\log(a+bx)}{19602(bc-ad)^2 g} - \frac{AbBn\log^2(a+bx)}{39204(bc-ad)^2 g} + \frac{bB}{39}$$

$$= \frac{B^2n^2}{19602(bc-ad)g(c+dx)} + \frac{bB^2n^2\log(a+bx)}{19602(bc-ad)^2 g} - \frac{AbBn\log^2(a+bx)}{39204(bc-ad)^2 g} + \frac{bB}{39}$$

$$= \frac{B^2n^2}{19602(bc-ad)g(c+dx)} + \frac{bB^2n^2\log(a+bx)}{19602(bc-ad)^2 g} - \frac{AbBn\log^2(a+bx)}{39204(bc-ad)^2 g} + \frac{bB}{39}$$

$$= \frac{B^2n^2}{19602(bc-ad)g(c+dx)} + \frac{bB^2n^2\log(a+bx)}{19602(bc-ad)^2 g} - \frac{AbBn\log^2(a+bx)}{39204(bc-ad)^2 g} + \frac{bB}{39}$$

Mathematica [B] time = 1.00, size = 789, normalized size = 3.42

$$\frac{b\log(a+bx)\left(2AB\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)-n\log\left(\frac{a+bx}{c+dx}\right)\right)+B^2\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)-n\log\left(\frac{a+bx}{c+dx}\right)\right)^2-2B^2n\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.\right.}{gi^2(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*
i*x)^2),x]
```

```
[Out] (b*B^2*n^2*Log[(a + b*x)/(c + d*x)]^3)/(3*(b*c - a*d)^2*g*i^2) - (2*B*n*Log
[(a + b*x)/(c + d*x)]*(-A + B*n - B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log
[(a + b*x)/(c + d*x)])))/((b*c - a*d)*g*i^2*(c + d*x)) + (Log[(a + b*x)/(c
+ d*x)]^2*(A*b*B*c*n - a*B^2*d*n^2 + A*b*B*d*n*x - b*B^2*d*n^2*x + b*B^2*c*
n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) + b*B^2*d*n
*x*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])))/((b*c -
a*d)^2*g*i^2*(c + d*x)) + (A^2 - 2*A*B*n + 2*B^2*n^2 + 2*A*B*(Log[e*((a + b
*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) - 2*B^2*n*(Log[e*((a + b*x)
/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)]) + B^2*(Log[e*((a + b*x)/(c + d
*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)/((b*c - a*d)*g*i^2*(c + d*x)) + (b
*Log[a + b*x]*(A^2 - 2*A*B*n + 2*B^2*n^2 + 2*A*B*(Log[e*((a + b*x)/(c + d*x
))^n] - n*Log[(a + b*x)/(c + d*x)]) - 2*B^2*n*(Log[e*((a + b*x)/(c + d*x))^
n] - n*Log[(a + b*x)/(c + d*x)]) + B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*
Log[(a + b*x)/(c + d*x)])^2))/((b*c - a*d)^2*g*i^2) - (b*(A^2 - 2*A*B*n + 2
*B^2*n^2 + 2*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x
)]) - 2*B^2*n*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])
 + B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)*Log
[c + d*x])/((b*c - a*d)^2*g*i^2)
```

fricas [A] time = 0.82, size = 432, normalized size = 1.87

$$\frac{3\,A^2bc-3\,A^2ad+\left(B^2bdn^2x+B^2bcn^2\right)\log\left(\frac{bx+a}{dx+c}\right)^3+6\left(B^2bc-B^2ad\right)n^2+3\left(B^2bc-B^2ad+\left(B^2bdx+B^2bc\right)\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, a
lgorithm="fricas")
```

```
[Out] 1/3*(3*A^2*b*c - 3*A^2*a*d + (B^2*b*d*n^2*x + B^2*b*c*n^2)*log((b*x + a)/(d
*x + c))^3 + 6*(B^2*b*c - B^2*a*d)*n^2 + 3*(B^2*b*c - B^2*a*d + (B^2*b*d*x
+ B^2*b*c)*log((b*x + a)/(d*x + c)))*log(e)^2 - 3*(B^2*a*d*n^2 - A*B*b*c*n
+ (B^2*b*d*n^2 - A*B*b*d*n)*x)*log((b*x + a)/(d*x + c))^2 - 6*(A*B*b*c - A*
B*a*d)*n + 3*(2*A*B*b*c - 2*A*B*a*d + (B^2*b*d*n*x + B^2*b*c*n)*log((b*x +
a)/(d*x + c))^2 - 2*(B^2*b*c - B^2*a*d)*n - 2*(B^2*a*d*n - A*B*b*c + (B^2*b
*d*n - A*B*b*d)*x)*log((b*x + a)/(d*x + c)))*log(e) + 3*(2*B^2*a*d*n^2 - 2*
A*B*a*d*n + A^2*b*c + (2*B^2*b*d*n^2 - 2*A*B*b*d*n + A^2*b*d)*x)*log((b*x +
 a)/(d*x + c)))/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*g*i^2*x + (b^2*c^3 - 2
*a*b*c^2*d + a^2*c*d^2)*g*i^2)
```

giac [A] time = 8.06, size = 314, normalized size = 1.36

$$-\frac{1}{3}\left(\frac{B^2bn^2\log\left(\frac{bx+a}{dx+c}\right)^3}{bcg-adg}-3\left(\frac{(bx+a)B^2dn^2}{\left(bcg-adg\right)(dx+c)}-\frac{ABbn+B^2bn}{bcg-adg}\right)\log\left(\frac{bx+a}{dx+c}\right)^2+\frac{3\left(A^2b+2\,ABb+B^2b\right)\log\left(\right.}{bcg-adg}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, a
lgorithm="giac")
```

```
[Out] -1/3*(B^2*b*n^2*log((b*x + a)/(d*x + c))^3/(b*c*g - a*d*g) - 3*((b*x + a)*B
^2*d*n^2/((b*c*g - a*d*g)*(d*x + c)) - (A*B*b*n + B^2*b*n)/(b*c*g - a*d*g))
*log((b*x + a)/(d*x + c))^2 + 3*(A^2*b + 2*A*B*b + B^2*b)*log((b*x + a)/(d*
x + c))/(b*c*g - a*d*g) + 6*(B^2*d*n^2 - A*B*d*n - B^2*d*n)*(b*x + a)*log((
b*x + a)/(d*x + c))/((b*c*g - a*d*g)*(d*x + c)) - 3*(2*B^2*d*n^2 - 2*A*B*d*
n - 2*B^2*d*n + A^2*d + 2*A*B*d + B^2*d)*(b*x + a)/((b*c*g - a*d*g)*(d*x +
c)))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)\left(dix+ci\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x)
```

maxima [B] time = 1.29, size = 1014, normalized size = 4.39

$$B^{2}\left(\frac{1}{\left(bcd-ad^{2}\right)gi^{2}x+\left(bc^{2}-acd\right)gi^{2}}+\frac{b\log\left(bx+a\right)}{\left(b^{2}c^{2}-2\,abcd+a^{2}d^{2}\right)gi^{2}}-\frac{b\log\left(dx+c\right)}{\left(b^{2}c^{2}-2\,abcd+a^{2}d^{2}\right)gi^{2}}\right)\log\left(e\left(\frac{bx}{dx+c}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^2,x, a
lgorithm="maxima")
```

```
[Out] B^2*(1/((b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/(
(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c
*d + a^2*d^2)*g*i^2))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2 + 2*A*B*(1/(
(b*c*d - a*d^2)*g*i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b^2*c^2
 - 2*a*b*c*d + a^2*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2
*d^2)*g*i^2))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) + 1/3*(((b*d*x + b*c)*
log(b*x + a)^3 - (b*d*x + b*c)*log(d*x + c)^3 + 3*(b*d*x + b*c)*log(b*x + a
)^2 + 3*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))*log(d*x + c)^2 + 6*b*c -
 6*a*d + 6*(b*d*x + b*c)*log(b*x + a) - 3*(2*b*d*x + (b*d*x + b*c)*log(b*x
+ a)^2 + 2*b*c + 2*(b*d*x + b*c)*log(b*x + a))*log(d*x + c))*n^2/(b^2*c^3*g
*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d^2*g*i^2 + (b^2*c^2*d*g*i^2 - 2*a*b*c*d^2
*g*i^2 + a^2*d^3*g*i^2)*x) - 3*((b*d*x + b*c)*log(b*x + a)^2 + (b*d*x + b*c
)*log(d*x + c)^2 + 2*b*c - 2*a*d + 2*(b*d*x + b*c)*log(b*x + a) - 2*(b*d*x
+ b*c + (b*d*x + b*c)*log(b*x + a))*log(d*x + c))*n*log(e*(b*x/(d*x + c) +
a/(d*x + c))^n)/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d^2*g*i^2 + (b^2
*c^2*d*g*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2)*x))*B^2 - ((b*d*x + b*c)*
log(b*x + a)^2 + (b*d*x + b*c)*log(d*x + c)^2 + 2*b*c - 2*a*d + 2*(b*d*x +
b*c)*log(b*x + a) - 2*(b*d*x + b*c + (b*d*x + b*c)*log(b*x + a))*log(d*x +
c))*A*B*n/(b^2*c^3*g*i^2 - 2*a*b*c^2*d*g*i^2 + a^2*c*d^2*g*i^2 + (b^2*c^2*d
*g*i^2 - 2*a*b*c*d^2*g*i^2 + a^2*d^3*g*i^2)*x) + A^2*(1/((b*c*d - a*d^2)*g*
i^2*x + (b*c^2 - a*c*d)*g*i^2) + b*log(b*x + a)/((b^2*c^2 - 2*a*b*c*d + a^2
*d^2)*g*i^2) - b*log(d*x + c)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*g*i^2))
```

mupad [B] time = 5.80, size = 365, normalized size = 1.58

$$\frac{B^2\,b\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^3}{3\,g\,i^2\,n\,(a\,d-b\,c)^2}-\frac{A^2-2\,A\,B\,n+2\,B^2\,n^2}{(a\,d-b\,c)\,\left(c\,g\,i^2+d\,g\,i^2\,x\right)}-\frac{2\,B\,\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\,(A-B\,n)}{(a\,d-b\,c)\,\left(c\,g\,i^2+d\,g\,i^2\,x\right)}-\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2\,\left(\frac{}{(a\,d-b\,c)\,(c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)*(c*i + d*i*x)^2
),x)
```

```
[Out] (B^2*b*log(e*((a + b*x)/(c + d*x))^n)^3)/(3*g*i^2*n*(a*d - b*c)^2) - (A^2 +
 2*B^2*n^2 - 2*A*B*n)/((a*d - b*c)*(c*g*i^2 + d*g*i^2*x)) - (2*B*log(e*((a
+ b*x)/(c + d*x))^n)*(A - B*n))/((a*d - b*c)*(c*g*i^2 + d*g*i^2*x)) - (b*at
an((b*(2*b*d*x + (a^2*d^2*g*i^2 - b^2*c^2*g*i^2)/(g*i^2*(a*d - b*c)))*(A^2
+ 2*B^2*n^2 - 2*A*B*n)*1i)/((a*d - b*c)*(A^2*b + 2*B^2*b*n^2 - 2*A*B*b*n)))
*(A^2 + 2*B^2*n^2 - 2*A*B*n)*2i)/(g*i^2*(a*d - b*c)^2) - log(e*((a + b*x)/(
c + d*x))^n)^2*(B^2/((a*d - b*c)*(c*g*i^2 + d*g*i^2*x)) - (B*b*(A - B*n))/(
g*i^2*n*(a*d - b*c)^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)/(d*i*x+c*i)**2,x)
```

```
[Out] Timed out
```

3.199 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2(ci+dix)^2}\,dx$

Optimal. Leaf size=392

$$-\frac{b^2(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{g^2i^2(a+bx)(bc-ad)^3}-\frac{2b^2Bn(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^2(a+bx)(bc-ad)^3}+\frac{d^2(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{g^2i^2(c+dx)(bc-ad)^3}$$

```
[Out] -2*A*B*d^2*n*(b*x+a)/(-a*d+b*c)^3/g^2/i^2/(d*x+c)+2*B^2*d^2*n^2*(b*x+a)/(-a
*d+b*c)^3/g^2/i^2/(d*x+c)-2*b^2*B^2*n^2*(d*x+c)/(-a*d+b*c)^3/g^2/i^2/(b*x+a
)-2*B^2*d^2*n*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^3/g^2/i^2/(d*x+c
)-2*b^2*B*n*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g^2/i^2/(b
*x+a)+d^2*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^2/i^2/(d
*x+c)-b^2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g^2/i^2/(b
*x+a)-2/3*b*d*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^3/g^2/i^2/n
```

Rubi [C] time = 6.81, antiderivative size = 1621, normalized size of antiderivative = 4.14, number of steps used = 107, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.689, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i + d*i*x)
^2),x]
```

```
[Out] (-2*b*B^2*n^2)/((b*c - a*d)^2*g^2*i^2*(a + b*x)) - (2*B^2*d*n^2)/((b*c - a*
d)^2*g^2*i^2*(c + d*x)) - (4*b*B^2*d*n^2*Log[a + b*x])/((b*c - a*d)^3*g^2*i
^2) + (2*A*b*B*d*n*Log[a + b*x]^2)/((b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*Log
[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*
d)^3*g^2*i^2) + (2*b*B^2*d*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/(
(b*c - a*d)^3*g^2*i^2) - (2*b*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(
(b*c - a*d)^2*g^2*i^2*(a + b*x)) + (2*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]))/((b*c - a*d)^2*g^2*i^2*(c + d*x)) - (b*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n])^2)/((b*c - a*d)^2*g^2*i^2*(a + b*x)) - (d*(A + B*Log[e*((a + b*
x)/(c + d*x))^n])^2)/((b*c - a*d)^2*g^2*i^2*(c + d*x)) - (2*b*d*Log[a + b*x
]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^3*g^2*i^2) + (4*b*
B^2*d*n^2*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) - (4*A*b*B*d*n*Log[-((d*(a
+ b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) - (2*b*B^2*d*Lo
g[(a + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (2*b*d*(A + B*Log[
e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2) + (2*A*
b*B*d*n*Log[c + d*x]^2)/((b*c - a*d)^3*g^2*i^2) - (2*b*B^2*d*n^2*Log[a + b*
x]*Log[c + d*x]^2)/((b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*n*Log[e*((a + b*x)/
(c + d*x))^n]*Log[c + d*x]^2)/((b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*n^2*Log[
c + d*x]^3)/(3*(b*c - a*d)^3*g^2*i^2) - (4*A*b*B*d*n*Log[a + b*x]*Log[(b*(c
 + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) + (2*b*B^2*d*Log[(a + b*x)^n
]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*n*
Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)])/((b*c - a*d)^3*g^2*i^2) - (2
*b*B^2*d*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^3*g^2*i^2) + (2*b
*B^2*d*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d
)^3*g^2*i^2) + (4*b*B^2*d*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]*
(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)]))/
((b*c - a*d)^3*g^2*i^2) - (4*A*b*B*d*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*
d))])/((b*c - a*d)^3*g^2*i^2) + (4*b*B^2*d*n*Log[(a + b*x)^n]*PolyLog[2, -(
```

```
(d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^2*i^2) - (4*A*b*B*d*n*PolyLog
[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*n*Log[
(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i
^2) + (4*b*B^2*d*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log
[(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2
*i^2) - (4*b*B^2*d*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 + (b*c - a
*d)/(d*(a + b*x))])/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*n^2*PolyLog[3, -((
d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*n^2*PolyLo
g[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g^2*i^2) - (4*b*B^2*d*n^2*P
olyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^3*g^2*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
```

```
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
```

```
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(199c+199dx)^2(ag+bgx)^2}\,dx = \int\left(\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc-ad)^2g^2(a+bx)^2} - \frac{2b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc-ad)^3g^2(a+bx)} + \frac{d^2 \ldots}{3960\ldots}\right.$$

$$= -\frac{(2b^2d)\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}dx}{39601(bc-ad)^3g^2} + \frac{(2bd^2)\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}dx}{39601(bc-ad)^3g^2} + \frac{b^2\int \ldots}{\ldots}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc-ad)^2g^2(c+dx)} - \frac{2bd\log(a+\ldots}{\ldots}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc-ad)^2g^2(c+dx)} - \frac{2bd\log(a+\ldots}{\ldots}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc-ad)^2g^2(c+dx)} - \frac{2bd\log(a+\ldots}{\ldots}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc-ad)^2g^2(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{39601(bc-ad)^2g^2(c+dx)} - \frac{2bd\log(a+\ldots}{\ldots}$$

$$= -\frac{2bBn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{39601(bc-ad)^2g^2(a+bx)} + \frac{2Bdn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{39601(bc-ad)^2g^2(c+dx)} - \frac{b(A\ldots}{3960\ldots}$$

$$= \frac{2bB^2d\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39601(bc-ad)^3g^2} - \frac{2bBn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{39601(bc-ad)^2g^2(a+bx)} + \frac{2\ldots}{\ldots}$$

$$= \frac{2bB^2d\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{39601(bc-ad)^3g^2} + \frac{2bB^2d\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)\ldots\right.}{39601(bc-ad)^3g^2}$$

$$= -\frac{2bB^2n^2}{39601(bc-ad)^2g^2(a+bx)} - \frac{2B^2dn^2}{39601(bc-ad)^2g^2(c+dx)} - \frac{4bB^2dn^2\log\ldots}{39601(bc-\ldots}$$

$$= -\frac{2bB^2n^2}{39601(bc-ad)^2g^2(a+bx)} - \frac{2B^2dn^2}{39601(bc-ad)^2g^2(c+dx)} - \frac{4bB^2dn^2\log\ldots}{39601(bc-\ldots}$$

$$= -\frac{2bB^2n^2}{39601(bc-ad)^2g^2(a+bx)} - \frac{2B^2dn^2}{39601(bc-ad)^2g^2(c+dx)} - \frac{4bB^2dn^2\log\ldots}{39601(bc-\ldots}$$

$$= -\frac{2bB^2n^2}{39601(bc-ad)^2g^2(a+bx)} - \frac{2B^2dn^2}{39601(bc-ad)^2g^2(c+dx)} - \frac{4bB^2dn^2\log\ldots}{39601(bc-\ldots}$$

$$= -\frac{2bB^2n^2}{39601(bc-ad)^2g^2(a+bx)} - \frac{2B^2dn^2}{39601(bc-ad)^2g^2(c+dx)} - \frac{4bB^2dn^2\log\ldots}{39601(bc-\ldots}$$

Mathematica [B] time = 1.39, size = 870, normalized size = 2.22

$$-\frac{2bB^2dn^2(a+bx)(c+dx)\log^3\left(\frac{a+bx}{c+dx}\right)+3Bn\left(2Ad^2x^2b^2+Bc^2nb^2+2Acdxb^2+2Bcdnxb^2+2aAcdb+2aAd^2xb\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i +
d*i*x)^2),x]
```

```
[Out] -1/3*(2*b*B^2*d*n^2*(a + b*x)*(c + d*x)*Log[(a + b*x)/(c + d*x)]^3 + 3*B*n*
Log[(a + b*x)/(c + d*x)]^2*(2*a*A*b*c*d + b^2*B*c^2*n - a^2*B*d^2*n + 2*A*b
^2*c*d*x + 2*a*A*b*d^2*x + 2*b^2*B*c*d*n*x - 2*a*b*B*d^2*n*x + 2*A*b^2*d^2*
x^2 + 2*b*B*d*(a + b*x)*(c + d*x)*Log[e*((a + b*x)/(c + d*x))^n] - 2*b*B*d*
n*(a + b*x)*(c + d*x)*Log[(a + b*x)/(c + d*x)]) + 6*B*(b*c - a*d)*n*Log[(a
+ b*x)/(c + d*x)]*(A*b*c + a*A*d + b*B*c*n - a*B*d*n + 2*A*b*d*x + B*(a*d +
 b*(c + 2*d*x))*Log[e*((a + b*x)/(c + d*x))^n] - B*n*(b*c + a*d + 2*b*d*x)*
Log[(a + b*x)/(c + d*x)]) + 6*b*d*(a + b*x)*(c + d*x)*Log[a + b*x]*(A^2 + 2
*B^2*n^2 + 2*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x
)]) + B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])^2)
+ 3*b*(b*c - a*d)*(c + d*x)*(A^2 + 2*A*B*n + 2*B^2*n^2 + B^2*Log[e*((a + b*
x)/(c + d*x))^n]^2 - 2*B*n*(A + B*n)*Log[(a + b*x)/(c + d*x)] + B^2*n^2*Log
[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(A + B*n - B*n
*Log[(a + b*x)/(c + d*x)])) + 3*d*(b*c - a*d)*(a + b*x)*(A^2 - 2*A*B*n + 2*
B^2*n^2 + B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-A + B*n)*Log[(a +
b*x)/(c + d*x)] + B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)
/(c + d*x))^n]*(-A + B*n + B*n*Log[(a + b*x)/(c + d*x)])) - 6*b*d*(a + b*x)
*(c + d*x)*(A^2 + 2*B^2*n^2 + 2*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log
[(a + b*x)/(c + d*x)]) + B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b
*x)/(c + d*x)])^2)*Log[c + d*x])/((b*c - a*d)^3*g^2*i^2*(a + b*x)*(c + d*x)
)
```

fricas [B] time = 1.01, size = 983, normalized size = 2.51

$$-\frac{3\,A^2b^2c^2-3\,A^2a^2d^2+2\left(B^2b^2d^2n^2x^2+B^2abcdn^2+\left(B^2b^2cd+B^2abd^2\right)n^2x\right)\log\left(\frac{bx+a}{dx+c}\right)^3+6\left(B^2b^2c^2-B^2a^2d^2\right)n}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x,
 algorithm="fricas")
```

```
[Out] -1/3*(3*A^2*b^2*c^2 - 3*A^2*a^2*d^2 + 2*(B^2*b^2*d^2*n^2*x^2 + B^2*a*b*c*d*
n^2 + (B^2*b^2*c*d + B^2*a*b*d^2)*n^2*x)*log((b*x + a)/(d*x + c))^3 + 6*(B^
2*b^2*c^2 - B^2*a^2*d^2)*n^2 + 3*(B^2*b^2*c^2 - B^2*a^2*d^2 + 2*(B^2*b^2*c*
d - B^2*a*b*d^2)*x + 2*(B^2*b^2*d^2*x^2 + B^2*a*b*c*d + (B^2*b^2*c*d + B^2*
a*b*d^2)*x)*log((b*x + a)/(d*x + c)))*log(e)^2 + 3*(2*A*B*b^2*d^2*n*x^2 + 2
*A*B*a*b*c*d*n + (B^2*b^2*c^2 - B^2*a^2*d^2)*n^2 + 2*((B^2*b^2*c*d - B^2*a*
b*d^2)*n^2 + (A*B*b^2*c*d + A*B*a*b*d^2)*n)*x)*log((b*x + a)/(d*x + c))^2 +
 6*(A*B*b^2*c^2 - 2*A*B*a*b*c*d + A*B*a^2*d^2)*n + 6*(A^2*b^2*c*d - A^2*a*b
*d^2 + 2*(B^2*b^2*c*d - B^2*a*b*d^2)*n^2)*x + 6*(A*B*b^2*c^2 - A*B*a^2*d^2
+ (B^2*b^2*d^2*n*x^2 + B^2*a*b*c*d*n + (B^2*b^2*c*d + B^2*a*b*d^2)*n*x)*log
((b*x + a)/(d*x + c))^2 + (B^2*b^2*c^2 - 2*B^2*a*b*c*d + B^2*a^2*d^2)*n + 2
*(A*B*b^2*c*d - A*B*a*b*d^2)*x + (2*A*B*b^2*d^2*x^2 + 2*A*B*a*b*c*d + (B^2*
b^2*c^2 - B^2*a^2*d^2)*n + 2*(A*B*b^2*c*d + A*B*a*b*d^2 + (B^2*b^2*c*d - B^
2*a*b*d^2)*n)*x)*log((b*x + a)/(d*x + c)))*log(e) + 6*(A^2*a*b*c*d + (B^2*b
^2*c^2 + B^2*a^2*d^2)*n^2 + (2*B^2*b^2*d^2*n^2 + A^2*b^2*d^2)*x^2 + (A*B*b^
2*c^2 - A*B*a^2*d^2)*n + (A^2*b^2*c*d + A^2*a*b*d^2 + 2*(B^2*b^2*c*d + B^2*
```

```
a*b*d^2)*n^2 + 2*(A*B*b^2*c*d - A*B*a*b*d^2)*n)*x)*log((b*x + a)/(d*x + c))
)/((b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*g^2*i^2*x^2
+ (b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*g^2*i^2*x + (a*b^3*c^
4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*g^2*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)^{2}\left(dix+ci\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x)
```

maxima [B] time = 1.80, size = 2006, normalized size = 5.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^2,x,
 algorithm="maxima")
```

```
[Out] -B^2*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*g^2*i^
2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*g^2*i^2*x + (a*b^2*
c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*log(b*x + a)/((b^3*c^3 -
3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) - 2*b*d*log(d*x + c)/((b^
3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2))*log(e*(b*x/(d*x
+ c) + a/(d*x + c))^n)^2 - 2*A*B*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b
^2*c*d^2 + a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 +
a^3*d^3)*g^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b
*d*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^
2) - 2*b*d*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3
)*g^2*i^2))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 2/3*((3*b^2*c^2 - 3*a^
2*d^2 + (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)^3 + 3*
(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)*log(d*x + c)^2
 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(d*x + c)^3 + 6*(b^2*
c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*
x + a) - 3*(2*b^2*d^2*x^2 + 2*a*b*c*d + (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d +
 a*b*d^2)*x)*log(b*x + a)^2 + 2*(b^2*c*d + a*b*d^2)*x)*log(d*x + c))*n^2/(a
*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*
c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 - 3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*
d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2 + (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2
*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^4*g^2*i^2)*x) + 3*(b^2*c^2 - 2*a*b*c*d
 + a^2*d^2 - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)^2
 + 2*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)*log(d*x +
 c) - (b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(d*x + c)^2)*n*log
```

```
(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*c^3*d*g^
2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^2*i^2 -
3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i^2)*x^2
+ (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2 - a^4*d^
4*g^2*i^2)*x))*B^2 - 2*(b^2*c^2 - 2*a*b*c*d + a^2*d^2 - (b^2*d^2*x^2 + a*b*
c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + a*b*c*d + (b
^2*c*d + a*b*d^2)*x)*log(b*x + a)*log(d*x + c) - (b^2*d^2*x^2 + a*b*c*d + (
b^2*c*d + a*b*d^2)*x)*log(d*x + c)^2)*A*B*n/(a*b^3*c^4*g^2*i^2 - 3*a^2*b^2*
c^3*d*g^2*i^2 + 3*a^3*b*c^2*d^2*g^2*i^2 - a^4*c*d^3*g^2*i^2 + (b^4*c^3*d*g^
2*i^2 - 3*a*b^3*c^2*d^2*g^2*i^2 + 3*a^2*b^2*c*d^3*g^2*i^2 - a^3*b*d^4*g^2*i
^2)*x^2 + (b^4*c^4*g^2*i^2 - 2*a*b^3*c^3*d*g^2*i^2 + 2*a^3*b*c*d^3*g^2*i^2
- a^4*d^4*g^2*i^2)*x) - A^2*((2*b*d*x + b*c + a*d)/((b^3*c^2*d - 2*a*b^2*c*
d^2 + a^2*b*d^3)*g^2*i^2*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d
^3)*g^2*i^2*x + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*g^2*i^2) + 2*b*d*lo
g(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2*i^2) -
2*b*d*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g^2
*i^2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)^2}{{\left(a\,g+b\,g\,x\right)}^2\,{\left(c\,i+d\,i\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^2*(c*i + d*i*x)
^2),x)
```

```
[Out] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^2*(c*i + d*i*x)
^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**2/(d*i*x+c*i)**2
,x)
```

```
[Out] Timed out
```

3.200 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3(ci+dix)^2}\,dx$

Optimal. Leaf size=560

$$-\frac{b^3(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2g^3i^2(a+bx)^2(bc-ad)^4}-\frac{b^3Bn(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^3i^2(a+bx)^2(bc-ad)^4}+\frac{3b^2d(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{g^3i^2(a+bx)(bc-ad)}$$

```
[Out] 2*A*B*d^3*n*(b*x+a)/(-a*d+b*c)^4/g^3/i^2/(d*x+c)-2*B^2*d^3*n^2*(b*x+a)/(-a*
d+b*c)^4/g^3/i^2/(d*x+c)+6*b^2*B^2*d*n^2*(d*x+c)/(-a*d+b*c)^4/g^3/i^2/(b*x+
a)-1/4*b^3*B^2*n^2*(d*x+c)^2/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2+2*B^2*d^3*n*(b*
x+a)*ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^4/g^3/i^2/(d*x+c)+6*b^2*B*d*n*(d*
x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)-1/2*b^3*B
*n*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^3/i^2/(b*x+a)^2
-d^3*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^3/i^2/(d*x+c)
+3*b^2*d*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^3/i^2/(b*
x+a)-1/2*b^3*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^3/i
^2/(b*x+a)^2+b*d^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^4/g^3/i^2
/n
```

Rubi [C] time = 8.15, antiderivative size = 2207, normalized size of antiderivative = 3.94, number of steps used = 135, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.689, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^3*(c*i + d*i*x)
^2),x]
```

```
[Out] -(b*B^2*n^2)/(4*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (11*b*B^2*d*n^2)/(2*(b
*c - a*d)^3*g^3*i^2*(a + b*x)) + (2*B^2*d^2*n^2)/((b*c - a*d)^3*g^3*i^2*(c
+ d*x)) + (15*b*B^2*d^2*n^2*Log[a + b*x])/(2*(b*c - a*d)^4*g^3*i^2) - (3*A*
b*B*d^2*n*Log[a + b*x]^2)/((b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*n^2*Log[a
+ b*x]^2)/(2*(b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*Log[-((b*c - a*d)/(d*(a
+ b*x)))]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^3*i^2) - (3*b*
B^2*d^2*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^3*i
^2) - (b*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)^2*g^3*i
^2*(a + b*x)^2) + (5*b*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c
- a*d)^3*g^3*i^2*(a + b*x)) - (2*B*d^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))
^n]))/((b*c - a*d)^3*g^3*i^2*(c + d*x)) + (3*b*B*d^2*n*Log[a + b*x]*(A + B*
Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4*g^3*i^2) - (b*(A + B*Log[e*
((a + b*x)/(c + d*x))^n])^2)/(2*(b*c - a*d)^2*g^3*i^2*(a + b*x)^2) + (2*b*d
*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^3*g^3*i^2*(a + b*x)
) + (d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^3*g^3*i^2*(
c + d*x)) + (3*b*d^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)
/((b*c - a*d)^4*g^3*i^2) - (15*b*B^2*d^2*n^2*Log[c + d*x])/(2*(b*c - a*d)^4
*g^3*i^2) + (6*A*b*B*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/
((b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))
]*Log[c + d*x])/((b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*Log[(a + b*x)^n]^2*L
og[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*b*B*d^2*n*(A + B*Log[e*((a + b*x)
/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*b*d^2*(A + B*Log
[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/((b*c - a*d)^4*g^3*i^2) - (3*A
*b*B*d^2*n*Log[c + d*x]^2)/((b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*n^2*Log[c
```

```
 + d*x]^2)/(2*(b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*n^2*Log[a + b*x]*Log[c
+ d*x]^2)/((b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*n*Log[e*((a + b*x)/(c + d*
x))^n]*Log[c + d*x]^2)/((b*c - a*d)^4*g^3*i^2) - (b*B^2*d^2*n^2*Log[c + d*x
]^3)/((b*c - a*d)^4*g^3*i^2) + (6*A*b*B*d^2*n*Log[a + b*x]*Log[(b*(c + d*x)
)/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*n^2*Log[a + b*x]*Log
[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) - (3*b*B^2*d^2*Log[(a
+ b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) + (6*b*
B^2*d^2*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)])/((b*c - a*d)^4*g^3
*i^2) + (3*b*B^2*d^2*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^4*g^3
*i^2) - (3*b*B^2*d^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-n)]^
2)/((b*c - a*d)^4*g^3*i^2) - (6*b*B^2*d^2*n*Log[-((d*(a + b*x))/(b*c - a*d)
)]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c
 + d*x)^(-n)]))/((b*c - a*d)^4*g^3*i^2) + (6*A*b*B*d^2*n*PolyLog[2, -((d*(a
 + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^3*i^2) + (3*b*B^2*d^2*n^2*PolyLog[
2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^3*i^2) - (6*b*B^2*d^2*n*
Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g
^3*i^2) + (6*A*b*B*d^2*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d
)^4*g^3*i^2) + (3*b*B^2*d^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*
c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c +
 d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) - (6*b*B^2*d^2*n*(Log[(a + b*x
)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (b*
(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*n*Log[e*((a
 + b*x)/(c + d*x))^n]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*
d)^4*g^3*i^2) + (6*b*B^2*d^2*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/
((b*c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*n^2*PolyLog[3, (b*(c + d*x))/(b*c -
a*d)])/((b*c - a*d)^4*g^3*i^2) + (6*b*B^2*d^2*n^2*PolyLog[3, 1 + (b*c - a*d
)/(d*(a + b*x))])/((b*c - a*d)^4*g^3*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
```

```
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
```

```
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(200c+200dx)^2(ag+bgx)^3}\,dx = \int \left(\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{40000(bc-ad)^2g^3(a+bx)^3} - \frac{b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{20000(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d^2}{400}\right.$$

$$= \frac{\left(3b^2d^2\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}\,dx}{40000(bc-ad)^4g^3} - \frac{\left(3bd^3\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}\,dx}{40000(bc-ad)^4g^3} - \frac{\left(b^2d\right)}{}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{80000(bc-ad)^2g^3(a+bx)^2} + \frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{20000(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+\right.}{40000(b}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{80000(bc-ad)^2g^3(a+bx)^2} + \frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{20000(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+\right.}{40000(b}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{80000(bc-ad)^2g^3(a+bx)^2} + \frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{20000(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+\right.}{40000(b}$$

$$= -\frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{80000(bc-ad)^2g^3(a+bx)^2} + \frac{bd\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{20000(bc-ad)^3g^3(a+bx)} + \frac{d^2\left(A+\right.}{40000(b}$$

$$= -\frac{bBn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{80000(bc-ad)^2g^3(a+bx)^2} + \frac{bBdn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8000(bc-ad)^3g^3(a+bx)} - \frac{Bd^2n\left(\right.}{2000}$$

$$= -\frac{3bB^2d^2\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{40000(bc-ad)^4g^3} - \frac{bBn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{80000(bc-ad)^2g^3(a+bx)^2} + $$

$$= -\frac{3bB^2d^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{40000(bc-ad)^4g^3} - \frac{3bB^2d^2\log(a+bx)\log^2\left(e\left(\frac{a}{c}\right.\right.}{40000(bc-ad)^4g^3}$$

$$= -\frac{bB^2n^2}{160000(bc-ad)^2g^3(a+bx)^2} + \frac{11bB^2dn^2}{80000(bc-ad)^3g^3(a+bx)} + \frac{}{20000(bc}$$

$$= -\frac{bB^2n^2}{160000(bc-ad)^2g^3(a+bx)^2} + \frac{11bB^2dn^2}{80000(bc-ad)^3g^3(a+bx)} + \frac{}{20000(bc}$$

$$= -\frac{bB^2n^2}{160000(bc-ad)^2g^3(a+bx)^2} + \frac{11bB^2dn^2}{80000(bc-ad)^3g^3(a+bx)} + \frac{}{20000(bc}$$

$$= -\frac{bB^2n^2}{160000(bc-ad)^2g^3(a+bx)^2} + \frac{11bB^2dn^2}{80000(bc-ad)^3g^3(a+bx)} + \frac{}{20000(bc}$$

$$= -\frac{bB^2n^2}{160000(bc-ad)^2g^3(a+bx)^2} + \frac{11bB^2dn^2}{80000(bc-ad)^3g^3(a+bx)} + \frac{}{20000(bc}$$

Mathematica [B] time = 1.99, size = 1340, normalized size = 2.39

$$\frac{4bB^2d^2n^2(a+bx)^2(c+dx)\log^3\left(\frac{a+bx}{c+dx}\right)+2Bn\left(6Ad^3x^3b^3+3Bd^3nx^3b^3+6Acd^2x^2b^3+9Bcd^2nx^2b^3-Bc^3nb^3+3\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^3*(c*i +
d*i*x)^2),x]
```

```
[Out] (4*b*B^2*d^2*n^2*(a + b*x)^2*(c + d*x)*Log[(a + b*x)/(c + d*x)]^3 + 2*B*n*L
og[(a + b*x)/(c + d*x)]^2*(6*a^2*A*b*c*d^2 - b^3*B*c^3*n + 6*a*b^2*B*c^2*d*
n - 2*a^3*B*d^3*n + 12*a*A*b^2*c*d^2*x + 6*a^2*A*b*d^3*x + 3*b^3*B*c^2*d*n*
x + 12*a*b^2*B*c*d^2*n*x - 6*a^2*b*B*d^3*n*x + 6*A*b^3*c*d^2*x^2 + 12*a*A*b
^2*d^3*x^2 + 9*b^3*B*c*d^2*n*x^2 + 6*A*b^3*d^3*x^3 + 3*b^3*B*d^3*n*x^3 + 6*
b*B*d^2*(a + b*x)^2*(c + d*x)*Log[e*((a + b*x)/(c + d*x))^n] - 6*b*B*d^2*n*
(a + b*x)^2*(c + d*x)*Log[(a + b*x)/(c + d*x)]) + 2*b*d*(b*c - a*d)*(a + b*
x)*(c + d*x)*(4*A^2 + 10*A*B*n + 11*B^2*n^2 + 4*B^2*Log[e*((a + b*x)/(c + d
*x))^n]^2 - 2*B*n*(4*A + 5*B*n)*Log[(a + b*x)/(c + d*x)] + 4*B^2*n^2*Log[(a
 + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(4*A + 5*B*n - 4*
B*n*Log[(a + b*x)/(c + d*x)])) - b*(b*c - a*d)^2*(c + d*x)*(2*A^2 + 2*A*B*n
 + B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + B*n)*Log
[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((
a + b*x)/(c + d*x))^n]*(2*A + B*n - 2*B*n*Log[(a + b*x)/(c + d*x)])) + 6*b*
d^2*(a + b*x)^2*(c + d*x)*Log[a + b*x]*(2*A^2 + 2*A*B*n + 5*B^2*n^2 + 2*B^2
*Log[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + B*n)*Log[(a + b*x)/(c + d*
x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x)
)^n]*(2*A + B*n - 2*B*n*Log[(a + b*x)/(c + d*x)])) + 2*B*(b*c - a*d)*n*Log[
(a + b*x)/(c + d*x)]*(2*b*d*(a + b*x)*(c + d*x)*(4*A + 5*B*n + 4*B*Log[e*((
a + b*x)/(c + d*x))^n] - 4*B*n*Log[(a + b*x)/(c + d*x)]) - b*(b*c - a*d)*(c
 + d*x)*(2*A + B*n + 2*B*Log[e*((a + b*x)/(c + d*x))^n] - 2*B*n*Log[(a + b*
x)/(c + d*x)]) + 4*d^2*(a + b*x)^2*(A - B*n + B*Log[e*((a + b*x)/(c + d*x))
^n] - B*n*Log[(a + b*x)/(c + d*x)])) + 4*d^2*(b*c - a*d)*(a + b*x)^2*(A^2 -
 2*A*B*n + 2*B^2*n^2 + B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-A + B
*n)*Log[(a + b*x)/(c + d*x)] + B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log
[e*((a + b*x)/(c + d*x))^n]*(-A + B*n + B*n*Log[(a + b*x)/(c + d*x)])) - 6*
b*d^2*(a + b*x)^2*(c + d*x)*(2*A^2 + 2*A*B*n + 5*B^2*n^2 + 2*B^2*Log[e*((a
+ b*x)/(c + d*x))^n]^2 - 2*B*n*(2*A + B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2
*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(2*A +
 B*n - 2*B*n*Log[(a + b*x)/(c + d*x)]))*Log[c + d*x])/(4*(b*c - a*d)^4*g^3*
i^2*(a + b*x)^2*(c + d*x))
```

fricas [B] time = 1.07, size = 2052, normalized size = 3.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x,
 algorithm="fricas")
```

```
[Out] -1/4*(2*A^2*b^3*c^3 - 12*A^2*a*b^2*c^2*d + 6*A^2*a^2*b*c*d^2 + 4*A^2*a^3*d^
3 - 4*(B^2*b^3*d^3*n^2*x^3 + B^2*a^2*b*c*d^2*n^2 + (B^2*b^3*c*d^2 + 2*B^2*a
*b^2*d^3)*n^2*x^2 + (2*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*n^2*x)*log((b*x + a
)/(d*x + c))^3 + (B^2*b^3*c^3 - 24*B^2*a*b^2*c^2*d + 15*B^2*a^2*b*c*d^2 + 8
*B^2*a^3*d^3)*n^2 - 6*(2*A^2*b^3*c*d^2 - 2*A^2*a*b^2*d^3 + 5*(B^2*b^3*c*d^2
 - B^2*a*b^2*d^3)*n^2 + 2*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*n)*x^2 + 2*(B^2*b
^3*c^3 - 6*B^2*a*b^2*c^2*d + 3*B^2*a^2*b*c*d^2 + 2*B^2*a^3*d^3 - 6*(B^2*b^3
*c*d^2 - B^2*a*b^2*d^3)*x^2 - 3*(B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2 - 3*B^2*
a^2*b*d^3)*x - 6*(B^2*b^3*d^3*x^3 + B^2*a^2*b*c*d^2 + (B^2*b^3*c*d^2 + 2*B^
```

```
2*a*b^2*d^3)*x^2 + (2*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*x)*log((b*x + a)/(d*
x + c)))*log(e)^2 - 2*(6*A*B*a^2*b*c*d^2*n + 3*(B^2*b^3*d^3*n^2 + 2*A*B*b^3
*d^3*n)*x^3 - (B^2*b^3*c^3 - 6*B^2*a*b^2*c^2*d + 2*B^2*a^3*d^3)*n^2 + 3*(3*
B^2*b^3*c*d^2*n^2 + 2*(A*B*b^3*c*d^2 + 2*A*B*a*b^2*d^3)*n)*x^2 + 3*((B^2*b^
3*c^2*d + 4*B^2*a*b^2*c*d^2 - 2*B^2*a^2*b*d^3)*n^2 + 2*(2*A*B*a*b^2*c*d^2 +
 A*B*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c))^2 + 2*(A*B*b^3*c^3 - 12*A*B*
a*b^2*c^2*d + 15*A*B*a^2*b*c*d^2 - 4*A*B*a^3*d^3)*n - 3*(2*A^2*b^3*c^2*d +
4*A^2*a*b^2*c*d^2 - 6*A^2*a^2*b*d^3 + (7*B^2*b^3*c^2*d + 6*B^2*a*b^2*c*d^2
- 13*B^2*a^2*b*d^3)*n^2 + 2*(3*A*B*b^3*c^2*d - 2*A*B*a*b^2*c*d^2 - A*B*a^2*
b*d^3)*n)*x + 2*(2*A*B*b^3*c^3 - 12*A*B*a*b^2*c^2*d + 6*A*B*a^2*b*c*d^2 + 4
*A*B*a^3*d^3 - 6*(2*A*B*b^3*c*d^2 - 2*A*B*a*b^2*d^3 + (B^2*b^3*c*d^2 - B^2*
a*b^2*d^3)*n)*x^2 - 6*(B^2*b^3*d^3*n*x^3 + B^2*a^2*b*c*d^2*n + (B^2*b^3*c*d
^2 + 2*B^2*a*b^2*d^3)*n*x^2 + (2*B^2*a*b^2*c*d^2 + B^2*a^2*b*d^3)*n*x)*log(
(b*x + a)/(d*x + c))^2 + (B^2*b^3*c^3 - 12*B^2*a*b^2*c^2*d + 15*B^2*a^2*b*c
*d^2 - 4*B^2*a^3*d^3)*n - 3*(2*A*B*b^3*c^2*d + 4*A*B*a*b^2*c*d^2 - 6*A*B*a^
2*b*d^3 + (3*B^2*b^3*c^2*d - 2*B^2*a*b^2*c*d^2 - B^2*a^2*b*d^3)*n)*x - 2*(6
*A*B*a^2*b*c*d^2 + 3*(B^2*b^3*d^3*n + 2*A*B*b^3*d^3)*x^3 + 3*(3*B^2*b^3*c*d
^2*n + 2*A*B*b^3*c*d^2 + 4*A*B*a*b^2*d^3)*x^2 - (B^2*b^3*c^3 - 6*B^2*a*b^2*
c^2*d + 2*B^2*a^3*d^3)*n + 3*(4*A*B*a*b^2*c*d^2 + 2*A*B*a^2*b*d^3 + (B^2*b^
3*c^2*d + 4*B^2*a*b^2*c*d^2 - 2*B^2*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c
)))*log(e) - 2*(6*A^2*a^2*b*c*d^2 + 3*(5*B^2*b^3*d^3*n^2 + 2*A*B*b^3*d^3*n
+ 2*A^2*b^3*d^3)*x^3 - (B^2*b^3*c^3 - 12*B^2*a*b^2*c^2*d - 4*B^2*a^3*d^3)*n
^2 + 3*(6*A*B*b^3*c*d^2*n + 2*A^2*b^3*c*d^2 + 4*A^2*a*b^2*d^3 + (7*B^2*b^3*
c*d^2 + 8*B^2*a*b^2*d^3)*n^2)*x^2 - 2*(A*B*b^3*c^3 - 6*A*B*a*b^2*c^2*d + 2*
A*B*a^3*d^3)*n + 3*(4*A^2*a*b^2*c*d^2 + 2*A^2*a^2*b*d^3 + (3*B^2*b^3*c^2*d
+ 8*B^2*a*b^2*c*d^2 + 4*B^2*a^2*b*d^3)*n^2 + 2*(A*B*b^3*c^2*d + 4*A*B*a*b^2
*c*d^2 - 2*A*B*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c)))/((b^6*c^4*d - 4*a
*b^5*c^3*d^2 + 6*a^2*b^4*c^2*d^3 - 4*a^3*b^3*c*d^4 + a^4*b^2*d^5)*g^3*i^2*x
^3 + (b^6*c^5 - 2*a*b^5*c^4*d - 2*a^2*b^4*c^3*d^2 + 8*a^3*b^3*c^2*d^3 - 7*a
^4*b^2*c*d^4 + 2*a^5*b*d^5)*g^3*i^2*x^2 + (2*a*b^5*c^5 - 7*a^2*b^4*c^4*d +
8*a^3*b^3*c^3*d^2 - 2*a^4*b^2*c^2*d^3 - 2*a^5*b*c*d^4 + a^6*d^5)*g^3*i^2*x
+ (a^2*b^4*c^5 - 4*a^3*b^3*c^4*d + 6*a^4*b^2*c^3*d^2 - 4*a^5*b*c^2*d^3 + a^
6*c*d^4)*g^3*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)^{3}\left(dix+ci\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x)
```

maxima [B] time = 4.81, size = 4198, normalized size = 7.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^2,x,
 algorithm="maxima")
```

```
[Out] 1/2*B^2*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*
a*b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*
g^3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3
- 2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2
*d^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d +
3*a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x + a)/((b^4*c^4 - 4*
a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d
^2*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d
^3 + a^4*d^4)*g^3*i^2))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2 + A*B*((6*
b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*a*b*d^2)*x)/
((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*g^3*i^2*x^3
+ (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 - 2*a^4*b*d^
4)*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d^2 + a^4*b
*c*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*a^4*b*c^2*
d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d
+ 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2) - 6*b*d^2*log(d*x +
 c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4
)*g^3*i^2))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/4*((b^3*c^3 - 24*a*b
^2*c^2*d + 15*a^2*b*c*d^2 + 8*a^3*d^3 - 4*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3
*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a)^3 +
 4*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*
d^2 + a^2*b*d^3)*x)*log(d*x + c)^3 - 30*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 6*(b^
3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 +
a^2*b*d^3)*x)*log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 +
2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*c
*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b
*x + a))*log(d*x + c)^2 - 3*(7*b^3*c^2*d + 6*a*b^2*c*d^2 - 13*a^2*b*d^3)*x
- 30*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*
c*d^2 + a^2*b*d^3)*x)*log(b*x + a) + 6*(5*b^3*d^3*x^3 + 5*a^2*b*c*d^2 + 5*(
b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 +
2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a)^2 + 5*(2*a*b
^2*c*d^2 + a^2*b*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b
^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a))*log(d*x + c))*n^
2/(a^2*b^4*c^5*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 + 6*a^4*b^2*c^3*d^2*g^3*i^
2 - 4*a^5*b*c^2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (b^6*c^4*d*g^3*i^2 - 4*a*
b^5*c^3*d^2*g^3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4*a^3*b^3*c*d^4*g^3*i^2 +
 a^4*b^2*d^5*g^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*b^5*c^4*d*g^3*i^2 - 2*a^
2*b^4*c^3*d^2*g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 - 7*a^4*b^2*c*d^4*g^3*i^2
 + 2*a^5*b*d^5*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2 - 7*a^2*b^4*c^4*d*g^3*i^
2 + 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g^3*i^2 - 2*a^5*b*c*d^4*g
^3*i^2 + a^6*d^5*g^3*i^2)*x) + 2*(b^3*c^3 - 12*a*b^2*c^2*d + 15*a^2*b*c*d^2
 - 4*a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2
 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x +
 a)^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a
*b^2*c*d^2 + a^2*b*d^3)*x)*log(d*x + c)^2 - 3*(3*b^3*c^2*d - 2*a*b^2*c*d^2
- a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x
^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a) + 6*(b^3*d^3*x^3 + a^2*b*c
*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x - 2*(b
^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 +
 a^2*b*d^3)*x)*log(b*x + a))*log(d*x + c))*n*log(e*(b*x/(d*x + c) + a/(d*x
+ c))^n)/(a^2*b^4*c^5*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 + 6*a^4*b^2*c^3*d^2
*g^3*i^2 - 4*a^5*b*c^2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (b^6*c^4*d*g^3*i^2
 - 4*a*b^5*c^3*d^2*g^3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4*a^3*b^3*c*d^4*g^
3*i^2 + a^4*b^2*d^5*g^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*b^5*c^4*d*g^3*i^2
 - 2*a^2*b^4*c^3*d^2*g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 - 7*a^4*b^2*c*d^4*
```

```
g^3*i^2 + 2*a^5*b*d^5*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2 - 7*a^2*b^4*c^4*d
*g^3*i^2 + 8*a^3*b^3*c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g^3*i^2 - 2*a^5*b*
c*d^4*g^3*i^2 + a^6*d^5*g^3*i^2)*x))*B^2 - 1/2*(b^3*c^3 - 12*a*b^2*c^2*d +
15*a^2*b*c*d^2 - 4*a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 6*(b^3*d^3*x^3
 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3
)*x)*log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d
^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(d*x + c)^2 - 3*(3*b^3*c^2*d -
2*a*b^2*c*d^2 - a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 +
2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a) + 6*(b^3*d^3
*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^2 + a^2*b
*d^3)*x - 2*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2
*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a))*log(d*x + c))*A*B*n/(a^2*b^4*c^5
*g^3*i^2 - 4*a^3*b^3*c^4*d*g^3*i^2 + 6*a^4*b^2*c^3*d^2*g^3*i^2 - 4*a^5*b*c^
2*d^3*g^3*i^2 + a^6*c*d^4*g^3*i^2 + (b^6*c^4*d*g^3*i^2 - 4*a*b^5*c^3*d^2*g^
3*i^2 + 6*a^2*b^4*c^2*d^3*g^3*i^2 - 4*a^3*b^3*c*d^4*g^3*i^2 + a^4*b^2*d^5*g
^3*i^2)*x^3 + (b^6*c^5*g^3*i^2 - 2*a*b^5*c^4*d*g^3*i^2 - 2*a^2*b^4*c^3*d^2*
g^3*i^2 + 8*a^3*b^3*c^2*d^3*g^3*i^2 - 7*a^4*b^2*c*d^4*g^3*i^2 + 2*a^5*b*d^5
*g^3*i^2)*x^2 + (2*a*b^5*c^5*g^3*i^2 - 7*a^2*b^4*c^4*d*g^3*i^2 + 8*a^3*b^3*
c^3*d^2*g^3*i^2 - 2*a^4*b^2*c^2*d^3*g^3*i^2 - 2*a^5*b*c*d^4*g^3*i^2 + a^6*d
^5*g^3*i^2)*x) + 1/2*A^2*((6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2
+ 3*(b^2*c*d + 3*a*b*d^2)*x)/((b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^
3 - a^3*b^2*d^4)*g^3*i^2*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 +
 5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)*g^3*i^2*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*
d + 3*a^3*b^2*c^2*d^2 + a^4*b*c*d^3 - a^5*d^4)*g^3*i^2*x + (a^2*b^3*c^4 - 3
*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^2 - a^5*c*d^3)*g^3*i^2) + 6*b*d^2*log(b*x +
a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)
*g^3*i^2) - 6*b*d^2*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*
d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^3*i^2))
```

mupad [B] time = 10.28, size = 1784, normalized size = 3.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^3*(c*i + d*i*x)
^2),x)
```

```
[Out] (B^2*b*d^2*log(e*((a + b*x)/(c + d*x))^n)^3)/(g^3*i^2*n*(a*d - b*c)^4) - lo
g(e*((a + b*x)/(c + d*x))^n)^2*(((B^2*(2*a*d + b*c))/(2*(a^2*d^2 + b^2*c^2
- 2*a*b*c*d)) + (3*B^2*b*d*x)/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(x*(a^2*
d*g^3*i^2 + 2*a*b*c*g^3*i^2) + x^2*(b^2*c*g^3*i^2 + 2*a*b*d*g^3*i^2) + a^2*
c*g^3*i^2 + b^2*d*g^3*i^2*x^3) - (3*B*b*d^2*(2*A + B*n))/(2*g^3*i^2*n*(a*d
- b*c)^4) + (3*B^2*b*d^2*(b*g^3*i^2*n*x^2*(a*d - b*c) + (a*c*g^3*i^2*n*(a*d
 - b*c))/d + (g^3*i^2*n*x*(a*d + b*c)*(a*d - b*c))/d))/(g^3*i^2*n*(a*d - b*
c)^4*(x*(a^2*d*g^3*i^2 + 2*a*b*c*g^3*i^2) + x^2*(b^2*c*g^3*i^2 + 2*a*b*d*g^
3*i^2) + a^2*c*g^3*i^2 + b^2*d*g^3*i^2*x^3))) - ((4*A^2*a^2*d^2 - 2*A^2*b^2
*c^2 + 8*B^2*a^2*d^2*n^2 - B^2*b^2*c^2*n^2 + 10*A^2*a*b*c*d - 8*A*B*a^2*d^2
*n - 2*A*B*b^2*c^2*n + 23*B^2*a*b*c*d*n^2 + 22*A*B*a*b*c*d*n)/(2*(a*d - b*c
)) + (3*x^2*(2*A^2*b^2*d^2 + 5*B^2*b^2*d^2*n^2 + 2*A*B*b^2*d^2*n))/(a*d - b
*c) + (3*x*(6*A^2*a*b*d^2 + 2*A^2*b^2*c*d + 13*B^2*a*b*d^2*n^2 + 7*B^2*b^2*
c*d*n^2 + 2*A*B*a*b*d^2*n + 6*A*B*b^2*c*d*n))/(2*(a*d - b*c)))/(x*(2*a^4*d^
3*g^3*i^2 + 4*a*b^3*c^3*g^3*i^2 - 6*a^2*b^2*c^2*d*g^3*i^2) + x^2*(2*b^4*c^3
*g^3*i^2 + 4*a^3*b*d^3*g^3*i^2 - 6*a^2*b^2*c*d^2*g^3*i^2) + x^3*(2*a^2*b^2*
d^3*g^3*i^2 + 2*b^4*c^2*d*g^3*i^2 - 4*a*b^3*c*d^2*g^3*i^2) + 2*a^2*b^2*c^3*
g^3*i^2 + 2*a^4*c*d^2*g^3*i^2 - 4*a^3*b*c^2*d*g^3*i^2) - (b*d^2*atan((b*d^2
*(2*A^2 + 5*B^2*n^2 + 2*A*B*n)*(2*a^4*d^4*g^3*i^2 - 2*b^4*c^4*g^3*i^2 + 4*a
*b^3*c^3*d*g^3*i^2 - 4*a^3*b*c*d^3*g^3*i^2)*3i)/(2*g^3*i^2*(a*d - b*c)^4*(6
*A^2*b*d^2 + 15*B^2*b*d^2*n^2 + 6*A*B*b*d^2*n)) + (b^2*d^3*x*(2*A^2 + 5*B^2
*n^2 + 2*A*B*n)*(a^3*d^3*g^3*i^2 - b^3*c^3*g^3*i^2 + 3*a*b^2*c^2*d*g^3*i^2
- 3*a^2*b*c*d^2*g^3*i^2)*6i)/(g^3*i^2*(a*d - b*c)^4*(6*A^2*b*d^2 + 15*B^2*b
```

```
*d^2*n^2 + 6*A*B*b*d^2*n)))*(2*A^2 + 5*B^2*n^2 + 2*A*B*n)*3i)/(g^3*i^2*(a*d
 - b*c)^4) - log(e*((a + b*x)/(c + d*x))^n)*(((B^2*b*c*n)/2 - 2*B^2*a*d*n -
 x*((3*B^2*b*d*n)/2 - 3*A*B*b*d) + 2*A*B*a*d + A*B*b*c)/(x*(a^4*d^3*g^3*i^2
 + 2*a*b^3*c^3*g^3*i^2 - 3*a^2*b^2*c^2*d*g^3*i^2) + x^2*(b^4*c^3*g^3*i^2 +
2*a^3*b*d^3*g^3*i^2 - 3*a^2*b^2*c*d^2*g^3*i^2) + x^3*(a^2*b^2*d^3*g^3*i^2 +
 b^4*c^2*d*g^3*i^2 - 2*a*b^3*c*d^2*g^3*i^2) + a^2*b^2*c^3*g^3*i^2 + a^4*c*d
^2*g^3*i^2 - 2*a^3*b*c^2*d*g^3*i^2) + (3*B*b*d^2*(2*A + B*n)*(b*g^3*i^2*n*x
^2*(a*d - b*c)^3 + (g^3*i^2*n*x*(a*d + b*c)*(a*d - b*c)^3)/d + (a*c*g^3*i^2
*n*(a*d - b*c)^3)/d))/(g^3*i^2*n*(a*d - b*c)^4*(x*(a^4*d^3*g^3*i^2 + 2*a*b^
3*c^3*g^3*i^2 - 3*a^2*b^2*c^2*d*g^3*i^2) + x^2*(b^4*c^3*g^3*i^2 + 2*a^3*b*d
^3*g^3*i^2 - 3*a^2*b^2*c*d^2*g^3*i^2) + x^3*(a^2*b^2*d^3*g^3*i^2 + b^4*c^2*
d*g^3*i^2 - 2*a*b^3*c*d^2*g^3*i^2) + a^2*b^2*c^3*g^3*i^2 + a^4*c*d^2*g^3*i^
2 - 2*a^3*b*c^2*d*g^3*i^2)))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**3/(d*i*x+c*i)**2
,x)
```

```
[Out] Timed out
```

3.201 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^4(ci+dix)^2}\,dx$

Optimal. Leaf size=729

$$-\frac{b^4(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{3g^4i^2(a+bx)^3(bc-ad)^5}-\frac{2b^4Bn(c+dx)^3\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{9g^4i^2(a+bx)^3(bc-ad)^5}+\frac{2b^3d(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)\right.\right.}{g^4i^2(a+bx)^2(bc-a}$$

```
[Out] -2*A*B*d^4*n*(b*x+a)/(-a*d+b*c)^5/g^4/i^2/(d*x+c)+2*B^2*d^4*n^2*(b*x+a)/(-a
*d+b*c)^5/g^4/i^2/(d*x+c)-12*b^2*B^2*d^2*n^2*(d*x+c)/(-a*d+b*c)^5/g^4/i^2/(
b*x+a)+b^3*B^2*d*n^2*(d*x+c)^2/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-2/27*b^4*B^2*
n^2*(d*x+c)^3/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3-2*B^2*d^4*n*(b*x+a)*ln(e*((b*x
+a)/(d*x+c))^n)/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-12*b^2*B*d^2*n*(d*x+c)*(A+B*ln
(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)+2*b^3*B*d*n*(d*x+c)^2
*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^2-2/9*b^4*B*n
*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^4/i^2/(b*x+a)^3+d
^4*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^5/g^4/i^2/(d*x+c)-6
*b^2*d^2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^5/g^4/i^2/(b*
x+a)+2*b^3*d*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^5/g^4/i
^2/(b*x+a)^2-1/3*b^4*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)
^5/g^4/i^2/(b*x+a)^3-4/3*b*d^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*
c)^5/g^4/i^2/n
```

Rubi [C] time = 9.29, antiderivative size = 2368, normalized size of antiderivative = 3.25, number of steps used = 167, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.689, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i + d*i*x)
^2),x]
```

```
[Out] (-2*b*B^2*n^2)/(27*(b*c - a*d)^2*g^4*i^2*(a + b*x)^3) + (7*b*B^2*d*n^2)/(9*
(b*c - a*d)^3*g^4*i^2*(a + b*x)^2) - (92*b*B^2*d^2*n^2)/(9*(b*c - a*d)^4*g^
4*i^2*(a + b*x)) - (2*B^2*d^3*n^2)/((b*c - a*d)^4*g^4*i^2*(c + d*x)) - (110
*b*B^2*d^3*n^2*Log[a + b*x])/(9*(b*c - a*d)^5*g^4*i^2) + (4*A*b*B*d^3*n*Log
[a + b*x]^2)/((b*c - a*d)^5*g^4*i^2) + (10*b*B^2*d^3*n^2*Log[a + b*x]^2)/(3
*(b*c - a*d)^5*g^4*i^2) + (4*b*B^2*d^3*Log[-((b*c - a*d)/(d*(a + b*x)))]*Lo
g[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^5*g^4*i^2) + (4*b*B^2*d^3*Log[
a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^5*g^4*i^2) - (2*b*B
*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(9*(b*c - a*d)^2*g^4*i^2*(a + b*
x)^3) + (4*b*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*(b*c - a*d)^3
*g^4*i^2*(a + b*x)^2) - (26*b*B*d^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
))/(3*(b*c - a*d)^4*g^4*i^2*(a + b*x)) + (2*B*d^3*n*(A + B*Log[e*((a + b*x)
/(c + d*x))^n]))/((b*c - a*d)^4*g^4*i^2*(c + d*x)) - (20*b*B*d^3*n*Log[a +
b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(3*(b*c - a*d)^5*g^4*i^2) - (b
*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(3*(b*c - a*d)^2*g^4*i^2*(a + b*
x)^3) + (b*d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^3*g^4*i
^2*(a + b*x)^2) - (3*b*d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c
- a*d)^4*g^4*i^2*(a + b*x)) - (d^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2
)/((b*c - a*d)^4*g^4*i^2*(c + d*x)) - (4*b*d^3*Log[a + b*x]*(A + B*Log[e*((
a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^5*g^4*i^2) + (110*b*B^2*d^3*n^2*Log
[c + d*x])/(9*(b*c - a*d)^5*g^4*i^2) - (8*A*b*B*d^3*n*Log[-((d*(a + b*x))/(
```

```
b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^5*g^4*i^2) - (20*b*B^2*d^3*n^2*Log[
-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*(b*c - a*d)^5*g^4*i^2) - (4*
b*B^2*d^3*Log[(a + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)^5*g^4*i^2) + (20*b*
B*d^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(3*(b*c - a*d)
^5*g^4*i^2) + (4*b*d^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x
])/((b*c - a*d)^5*g^4*i^2) + (4*A*b*B*d^3*n*Log[c + d*x]^2)/((b*c - a*d)^5*
g^4*i^2) + (10*b*B^2*d^3*n^2*Log[c + d*x]^2)/(3*(b*c - a*d)^5*g^4*i^2) - (4
*b*B^2*d^3*n^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^5*g^4*i^2) + (4*b*
B^2*d^3*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2)/((b*c - a*d)^5*g^4
*i^2) + (4*b*B^2*d^3*n^2*Log[c + d*x]^3)/(3*(b*c - a*d)^5*g^4*i^2) - (8*A*b
*B*d^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^4*i^
2) - (20*b*B^2*d^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(3*(b*c
 - a*d)^5*g^4*i^2) + (4*b*B^2*d^3*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c
 - a*d)])/((b*c - a*d)^5*g^4*i^2) - (8*b*B^2*d^3*n*Log[a + b*x]*Log[c + d*x
]*Log[(c + d*x)^(-n)])/((b*c - a*d)^5*g^4*i^2) - (4*b*B^2*d^3*Log[a + b*x]*
Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^5*g^4*i^2) + (4*b*B^2*d^3*Log[-((d*(a +
 b*x))/(b*c - a*d))]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^5*g^4*i^2) + (8*b*
B^2*d^3*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]*(Log[(a + b*x)^n]
- Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)]))/((b*c - a*d)^5*g^4
*i^2) - (8*A*b*B*d^3*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*
d)^5*g^4*i^2) - (20*b*B^2*d^3*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])
/(3*(b*c - a*d)^5*g^4*i^2) + (8*b*B^2*d^3*n*Log[(a + b*x)^n]*PolyLog[2, -((
d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^5*g^4*i^2) - (8*A*b*B*d^3*n*PolyLo
g[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^4*i^2) - (20*b*B^2*d^3*n^
2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(3*(b*c - a*d)^5*g^4*i^2) - (8*b*B
^2*d^3*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c -
 a*d)^5*g^4*i^2) + (8*b*B^2*d^3*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c +
 d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b
*c - a*d)^5*g^4*i^2) - (8*b*B^2*d^3*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLo
g[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^5*g^4*i^2) - (8*b*B^2*d^3
*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^5*g^4*i^2) - (8
*b*B^2*d^3*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^4*i^
2) - (8*b*B^2*d^3*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*
d)^5*g^4*i^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
```

```
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(201c+201dx)^2(ag+bgx)^4}\,dx=-\frac{2bB^2n^2}{1090827(bc-ad)^2g^4(a+bx)^3}+\frac{7bB^2dn^2}{363609(bc-ad)^3g^4(a+bx)^2}-\frac{9}{363609(b}$$

Mathematica [B] time = 3.04, size = 1695, normalized size = 2.33

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i +
d*i*x)^2),x]
```

```
[Out] -1/27*(36*b*B^2*d^3*n^2*(a + b*x)^3*(c + d*x)*Log[(a + b*x)/(c + d*x)]^3 +
9*B*n*Log[(a + b*x)/(c + d*x)]^2*(12*a^3*A*b*c*d^3 + b^4*B*c^4*n - 6*a*b^3*
B*c^3*d*n + 18*a^2*b^2*B*c^2*d^2*n - 3*a^4*B*d^4*n + 36*a^2*A*b^2*c*d^3*x +
 12*a^3*A*b*d^4*x - 2*b^4*B*c^3*d*n*x + 18*a*b^3*B*c^2*d^2*n*x + 36*a^2*b^2
*B*c*d^3*n*x - 12*a^3*b*B*d^4*n*x + 36*a*A*b^3*c*d^3*x^2 + 36*a^2*A*b^2*d^4
*x^2 + 6*b^4*B*c^2*d^2*n*x^2 + 54*a*b^3*B*c*d^3*n*x^2 + 12*A*b^4*c*d^3*x^3
+ 36*a*A*b^3*d^4*x^3 + 22*b^4*B*c*d^3*n*x^3 + 18*a*b^3*B*d^4*n*x^3 + 12*A*b
^4*d^4*x^4 + 10*b^4*B*d^4*n*x^4 + 12*b*B*d^3*(a + b*x)^3*(c + d*x)*Log[e*((
a + b*x)/(c + d*x))^n] - 12*b*B*d^3*n*(a + b*x)^3*(c + d*x)*Log[(a + b*x)/(
c + d*x)]) + 3*b*d^2*(b*c - a*d)*(a + b*x)^2*(c + d*x)*(27*A^2 + 78*A*B*n +
 92*B^2*n^2 + 27*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(9*A + 13*B*n
)*Log[(a + b*x)/(c + d*x)] + 27*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Lo
g[e*((a + b*x)/(c + d*x))^n]*(9*A + 13*B*n - 9*B*n*Log[(a + b*x)/(c + d*x)]
)) + 6*b*d^3*(a + b*x)^3*(c + d*x)*Log[a + b*x]*(18*A^2 + 30*A*B*n + 55*B^2
*n^2 + 18*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(6*A + 5*B*n)*Log[(a
 + b*x)/(c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a
```

```
+ b*x)/(c + d*x))^n]*(6*A + 5*B*n - 6*B*n*Log[(a + b*x)/(c + d*x)])) + b*(b
*c - a*d)^3*(c + d*x)*(9*A^2 + 6*A*B*n + 2*B^2*n^2 + 9*B^2*Log[e*((a + b*x)
/(c + d*x))^n]^2 - 6*B*n*(3*A + B*n)*Log[(a + b*x)/(c + d*x)] + 9*B^2*n^2*L
og[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(3*A + B*n -
 3*B*n*Log[(a + b*x)/(c + d*x)])) - 3*b*d*(b*c - a*d)^2*(a + b*x)*(c + d*x)
*(9*A^2 + 12*A*B*n + 7*B^2*n^2 + 9*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6
*B*n*(3*A + 2*B*n)*Log[(a + b*x)/(c + d*x)] + 9*B^2*n^2*Log[(a + b*x)/(c +
d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(3*A + 2*B*n - 3*B*n*Log[(a +
b*x)/(c + d*x)])) + 6*B*(b*c - a*d)*n*Log[(a + b*x)/(c + d*x)]*(3*b*d^2*(a
+ b*x)^2*(c + d*x)*(9*A + 13*B*n + 9*B*Log[e*((a + b*x)/(c + d*x))^n] - 9*B
*n*Log[(a + b*x)/(c + d*x)]) + b*(b*c - a*d)^2*(c + d*x)*(3*A + B*n + 3*B*L
og[e*((a + b*x)/(c + d*x))^n] - 3*B*n*Log[(a + b*x)/(c + d*x)]) - 3*b*d*(b*
c - a*d)*(a + b*x)*(c + d*x)*(3*A + 2*B*n + 3*B*Log[e*((a + b*x)/(c + d*x))
^n] - 3*B*n*Log[(a + b*x)/(c + d*x)]) + 9*d^3*(a + b*x)^3*(A - B*n + B*Log[
e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])) + 27*d^3*(b*c -
 a*d)*(a + b*x)^3*(A^2 - 2*A*B*n + 2*B^2*n^2 + B^2*Log[e*((a + b*x)/(c + d*
x))^n]^2 + 2*B*n*(-A + B*n)*Log[(a + b*x)/(c + d*x)] + B^2*n^2*Log[(a + b*x
)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(-A + B*n + B*n*Log[(a
+ b*x)/(c + d*x)])) - 6*b*d^3*(a + b*x)^3*(c + d*x)*(18*A^2 + 30*A*B*n + 55
*B^2*n^2 + 18*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(6*A + 5*B*n)*Lo
g[(a + b*x)/(c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*
((a + b*x)/(c + d*x))^n]*(6*A + 5*B*n - 6*B*n*Log[(a + b*x)/(c + d*x)]))*Lo
g[c + d*x])/((b*c - a*d)^5*g^4*i^2*(a + b*x)^3*(c + d*x))
```

fricas [B] time = 1.28, size = 3183, normalized size = 4.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x,
 algorithm="fricas")
```

```
[Out] -1/27*(9*A^2*b^4*c^4 - 54*A^2*a*b^3*c^3*d + 162*A^2*a^2*b^2*c^2*d^2 - 90*A^
2*a^3*b*c*d^3 - 27*A^2*a^4*d^4 + 6*(18*A^2*b^4*c*d^3 - 18*A^2*a*b^3*d^4 + 5
5*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*n^2 + 30*(A*B*b^4*c*d^3 - A*B*a*b^3*d^4)*
n)*x^3 + 36*(B^2*b^4*d^4*n^2*x^4 + B^2*a^3*b*c*d^3*n^2 + (B^2*b^4*c*d^3 + 3
*B^2*a*b^3*d^4)*n^2*x^3 + 3*(B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*n^2*x^2 + (
3*B^2*a^2*b^2*c*d^3 + B^2*a^3*b*d^4)*n^2*x)*log((b*x + a)/(d*x + c))^3 + (2
*B^2*b^4*c^4 - 27*B^2*a*b^3*c^3*d + 324*B^2*a^2*b^2*c^2*d^2 - 245*B^2*a^3*b
*c*d^3 - 54*B^2*a^4*d^4)*n^2 + 3*(18*A^2*b^4*c^2*d^2 + 72*A^2*a*b^3*c*d^3 -
 90*A^2*a^2*b^2*d^4 + 5*(17*B^2*b^4*c^2*d^2 + 32*B^2*a*b^3*c*d^3 - 49*B^2*a
^2*b^2*d^4)*n^2 + 6*(11*A*B*b^4*c^2*d^2 + 8*A*B*a*b^3*c*d^3 - 19*A*B*a^2*b^
2*d^4)*n)*x^2 + 9*(B^2*b^4*c^4 - 6*B^2*a*b^3*c^3*d + 18*B^2*a^2*b^2*c^2*d^2
 - 10*B^2*a^3*b*c*d^3 - 3*B^2*a^4*d^4 + 12*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*
x^3 + 6*(B^2*b^4*c^2*d^2 + 4*B^2*a*b^3*c*d^3 - 5*B^2*a^2*b^2*d^4)*x^2 - 2*(
B^2*b^4*c^3*d - 9*B^2*a*b^3*c^2*d^2 - 3*B^2*a^2*b^2*c*d^3 + 11*B^2*a^3*b*d^
4)*x + 12*(B^2*b^4*d^4*x^4 + B^2*a^3*b*c*d^3 + (B^2*b^4*c*d^3 + 3*B^2*a*b^3
*d^4)*x^3 + 3*(B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*x^2 + (3*B^2*a^2*b^2*c*d^
3 + B^2*a^3*b*d^4)*x)*log((b*x + a)/(d*x + c)))*log(e)^2 + 9*(12*A*B*a^3*b*
c*d^3*n + 2*(5*B^2*b^4*d^4*n^2 + 6*A*B*b^4*d^4*n)*x^4 + 2*((11*B^2*b^4*c*d^
3 + 9*B^2*a*b^3*d^4)*n^2 + 6*(A*B*b^4*c*d^3 + 3*A*B*a*b^3*d^4)*n)*x^3 + (B^
2*b^4*c^4 - 6*B^2*a*b^3*c^3*d + 18*B^2*a^2*b^2*c^2*d^2 - 3*B^2*a^4*d^4)*n^2
 + 6*((B^2*b^4*c^2*d^2 + 9*B^2*a*b^3*c*d^3)*n^2 + 6*(A*B*a*b^3*c*d^3 + A*B*
a^2*b^2*d^4)*n)*x^2 - 2*((B^2*b^4*c^3*d - 9*B^2*a*b^3*c^2*d^2 - 18*B^2*a^2*
b^2*c*d^3 + 6*B^2*a^3*b*d^4)*n^2 - 6*(3*A*B*a^2*b^2*c*d^3 + A*B*a^3*b*d^4)*
n)*x)*log((b*x + a)/(d*x + c))^2 + 6*(A*B*b^4*c^4 - 9*A*B*a*b^3*c^3*d + 54*
A*B*a^2*b^2*c^2*d^2 - 55*A*B*a^3*b*c*d^3 + 9*A*B*a^4*d^4)*n - (18*A^2*b^4*c
^3*d - 162*A^2*a*b^3*c^2*d^2 - 54*A^2*a^2*b^2*c*d^3 + 198*A^2*a^3*b*d^4 + (
19*B^2*b^4*c^3*d - 567*B^2*a*b^3*c^2*d^2 + 87*B^2*a^2*b^2*c*d^3 + 461*B^2*a
^3*b*d^4)*n^2 + 6*(5*A*B*b^4*c^3*d - 81*A*B*a*b^3*c^2*d^2 + 57*A*B*a^2*b^2*
```

```
c*d^3 + 19*A*B*a^3*b*d^4)*n)*x + 6*(3*A*B*b^4*c^4 - 18*A*B*a*b^3*c^3*d + 54
*A*B*a^2*b^2*c^2*d^2 - 30*A*B*a^3*b*c*d^3 - 9*A*B*a^4*d^4 + 6*(6*A*B*b^4*c*
d^3 - 6*A*B*a*b^3*d^4 + 5*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*n)*x^3 + 3*(6*A*B
*b^4*c^2*d^2 + 24*A*B*a*b^3*c*d^3 - 30*A*B*a^2*b^2*d^4 + (11*B^2*b^4*c^2*d^
2 + 8*B^2*a*b^3*c*d^3 - 19*B^2*a^2*b^2*d^4)*n)*x^2 + 18*(B^2*b^4*d^4*n*x^4
+ B^2*a^3*b*c*d^3*n + (B^2*b^4*c*d^3 + 3*B^2*a*b^3*d^4)*n*x^3 + 3*(B^2*a*b^
3*c*d^3 + B^2*a^2*b^2*d^4)*n*x^2 + (3*B^2*a^2*b^2*c*d^3 + B^2*a^3*b*d^4)*n*
x)*log((b*x + a)/(d*x + c))^2 + (B^2*b^4*c^4 - 9*B^2*a*b^3*c^3*d + 54*B^2*a
^2*b^2*c^2*d^2 - 55*B^2*a^3*b*c*d^3 + 9*B^2*a^4*d^4)*n - (6*A*B*b^4*c^3*d -
 54*A*B*a*b^3*c^2*d^2 - 18*A*B*a^2*b^2*c*d^3 + 66*A*B*a^3*b*d^4 + (5*B^2*b^
4*c^3*d - 81*B^2*a*b^3*c^2*d^2 + 57*B^2*a^2*b^2*c*d^3 + 19*B^2*a^3*b*d^4)*n
)*x + 3*(12*A*B*a^3*b*c*d^3 + 2*(5*B^2*b^4*d^4*n + 6*A*B*b^4*d^4)*x^4 + 2*(
6*A*B*b^4*c*d^3 + 18*A*B*a*b^3*d^4 + (11*B^2*b^4*c*d^3 + 9*B^2*a*b^3*d^4)*n
)*x^3 + 6*(6*A*B*a*b^3*c*d^3 + 6*A*B*a^2*b^2*d^4 + (B^2*b^4*c^2*d^2 + 9*B^2
*a*b^3*c*d^3)*n)*x^2 + (B^2*b^4*c^4 - 6*B^2*a*b^3*c^3*d + 18*B^2*a^2*b^2*c^
2*d^2 - 3*B^2*a^4*d^4)*n + 2*(18*A*B*a^2*b^2*c*d^3 + 6*A*B*a^3*b*d^4 - (B^2
*b^4*c^3*d - 9*B^2*a*b^3*c^2*d^2 - 18*B^2*a^2*b^2*c*d^3 + 6*B^2*a^3*b*d^4)*
n)*x)*log((b*x + a)/(d*x + c)))*log(e) + 6*(18*A^2*a^3*b*c*d^3 + (55*B^2*b^
4*d^4*n^2 + 30*A*B*b^4*d^4*n + 18*A^2*b^4*d^4)*x^4 + (18*A^2*b^4*c*d^3 + 54
*A^2*a*b^3*d^4 + 5*(17*B^2*b^4*c*d^3 + 27*B^2*a*b^3*d^4)*n^2 + 6*(11*A*B*b^
4*c*d^3 + 9*A*B*a*b^3*d^4)*n)*x^3 + (B^2*b^4*c^4 - 9*B^2*a*b^3*c^3*d + 54*B
^2*a^2*b^2*c^2*d^2 + 9*B^2*a^4*d^4)*n^2 + 3*(18*A^2*a*b^3*c*d^3 + 18*A^2*a^
2*b^2*d^4 + (11*B^2*b^4*c^2*d^2 + 63*B^2*a*b^3*c*d^3 + 36*B^2*a^2*b^2*d^4)*
n^2 + 6*(A*B*b^4*c^2*d^2 + 9*A*B*a*b^3*c*d^3)*n)*x^2 + 3*(A*B*b^4*c^4 - 6*A
*B*a*b^3*c^3*d + 18*A*B*a^2*b^2*c^2*d^2 - 3*A*B*a^4*d^4)*n + (54*A^2*a^2*b^
2*c*d^3 + 18*A^2*a^3*b*d^4 - (5*B^2*b^4*c^3*d - 81*B^2*a*b^3*c^2*d^2 - 108*
B^2*a^2*b^2*c*d^3 - 36*B^2*a^3*b*d^4)*n^2 - 6*(A*B*b^4*c^3*d - 9*A*B*a*b^3*
c^2*d^2 - 18*A*B*a^2*b^2*c*d^3 + 6*A*B*a^3*b*d^4)*n)*x)*log((b*x + a)/(d*x
+ c)))/((b^8*c^5*d - 5*a*b^7*c^4*d^2 + 10*a^2*b^6*c^3*d^3 - 10*a^3*b^5*c^2*
d^4 + 5*a^4*b^4*c*d^5 - a^5*b^3*d^6)*g^4*i^2*x^4 + (b^8*c^6 - 2*a*b^7*c^5*d
 - 5*a^2*b^6*c^4*d^2 + 20*a^3*b^5*c^3*d^3 - 25*a^4*b^4*c^2*d^4 + 14*a^5*b^3
*c*d^5 - 3*a^6*b^2*d^6)*g^4*i^2*x^3 + 3*(a*b^7*c^6 - 4*a^2*b^6*c^5*d + 5*a^
3*b^5*c^4*d^2 - 5*a^5*b^3*c^2*d^4 + 4*a^6*b^2*c*d^5 - a^7*b*d^6)*g^4*i^2*x^
2 + (3*a^2*b^6*c^6 - 14*a^3*b^5*c^5*d + 25*a^4*b^4*c^4*d^2 - 20*a^5*b^3*c^3
*d^3 + 5*a^6*b^2*c^2*d^4 + 2*a^7*b*c*d^5 - a^8*d^6)*g^4*i^2*x + (a^3*b^5*c^
6 - 5*a^4*b^4*c^5*d + 10*a^5*b^3*c^4*d^2 - 10*a^6*b^2*c^3*d^3 + 5*a^7*b*c^2
*d^4 - a^8*c*d^5)*g^4*i^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x,
 algorithm="giac")

[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{b x +a}{d x +c}\right)^{n}\right)+A \right)^{2}}{\left(b g x +a g \right)^{4} \left(d i x +c i \right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)

[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x)
```

maxima [B] time = 7.49, size = 6171, normalized size = 8.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^2,x,
 algorithm="maxima")
```

```
[Out] -1/3*B^2*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c*d^2 + 3*a^
3*d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2*c*d^2 - 11
*a^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4*a^3*b^
4*c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2*b^5*c^3
*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^4*i^2*x^3 +
 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*c^2*d^3 - 3
*a^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^3*b^4*c^4*d
 + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^5)*g^4*i^2*
x + (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2*d^3 +
a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*
a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2) -
12*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a
^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2))*log(e*(b*x/(d*x + c) +
a/(d*x + c))^n)^2 - 2/3*A*B*((12*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13
*a^2*b*c*d^2 + 3*a^3*d^3 + 6*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d -
 8*a*b^2*c*d^2 - 11*a^2*b*d^3)*x)/((b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5
*c^2*d^3 - 4*a^3*b^4*c*d^4 + a^4*b^3*d^5)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^
4*d - 6*a^2*b^5*c^3*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2
*d^5)*g^4*i^2*x^3 + 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*
a^4*b^3*c^2*d^3 - 3*a^5*b^2*c*d^4 + a^6*b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5
 - 11*a^3*b^4*c^4*d + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4
+ a^7*d^5)*g^4*i^2*x + (a^3*b^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 -
 4*a^6*b*c^2*d^3 + a^7*c*d^4)*g^4*i^2) + 12*b*d^3*log(b*x + a)/((b^5*c^5 -
5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a
^5*d^5)*g^4*i^2) - 12*b*d^3*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2
*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2))*log(
e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/27*((2*b^4*c^4 - 27*a*b^3*c^3*d + 32
4*a^2*b^2*c^2*d^2 - 245*a^3*b*c*d^3 - 54*a^4*d^4 + 330*(b^4*c*d^3 - a*b^3*d
^4)*x^3 + 36*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3
*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x
 + a)^3 - 36*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3
*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(d*x
 + c)^3 + 15*(17*b^4*c^2*d^2 + 32*a*b^3*c*d^3 - 49*a^2*b^2*d^4)*x^2 - 90*(b
^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 +
 a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a)^2 - 18*(5
*b^4*d^4*x^4 + 5*a^3*b*c*d^3 + 5*(b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 15*(a*b^3*
c*d^3 + a^2*b^2*d^4)*x^2 + 5*(3*a^2*b^2*c*d^3 + a^3*b*d^4)*x - 6*(b^4*d^4*x
^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2
*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a))*log(d*x + c)^2 -
 (19*b^4*c^3*d - 567*a*b^3*c^2*d^2 + 87*a^2*b^2*c*d^3 + 461*a^3*b*d^4)*x +
330*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c
*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a) - 6
*(55*b^4*d^4*x^4 + 55*a^3*b*c*d^3 + 55*(b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 165*
(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^
3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3
 + a^3*b*d^4)*x)*log(b*x + a)^2 + 55*(3*a^2*b^2*c*d^3 + a^3*b*d^4)*x - 30*(
b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3
+ a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a))*log(d*x
 + c))*n^2/(a^3*b^5*c^6*g^4*i^2 - 5*a^4*b^4*c^5*d*g^4*i^2 + 10*a^5*b^3*c^4*
d^2*g^4*i^2 - 10*a^6*b^2*c^3*d^3*g^4*i^2 + 5*a^7*b*c^2*d^4*g^4*i^2 - a^8*c*
d^5*g^4*i^2 + (b^8*c^5*d*g^4*i^2 - 5*a*b^7*c^4*d^2*g^4*i^2 + 10*a^2*b^6*c^3
```

```
*d^3*g^4*i^2 - 10*a^3*b^5*c^2*d^4*g^4*i^2 + 5*a^4*b^4*c*d^5*g^4*i^2 - a^5*b
^3*d^6*g^4*i^2)*x^4 + (b^8*c^6*g^4*i^2 - 2*a*b^7*c^5*d*g^4*i^2 - 5*a^2*b^6*
c^4*d^2*g^4*i^2 + 20*a^3*b^5*c^3*d^3*g^4*i^2 - 25*a^4*b^4*c^2*d^4*g^4*i^2 +
 14*a^5*b^3*c*d^5*g^4*i^2 - 3*a^6*b^2*d^6*g^4*i^2)*x^3 + 3*(a*b^7*c^6*g^4*i
^2 - 4*a^2*b^6*c^5*d*g^4*i^2 + 5*a^3*b^5*c^4*d^2*g^4*i^2 - 5*a^5*b^3*c^2*d^
4*g^4*i^2 + 4*a^6*b^2*c*d^5*g^4*i^2 - a^7*b*d^6*g^4*i^2)*x^2 + (3*a^2*b^6*c
^6*g^4*i^2 - 14*a^3*b^5*c^5*d*g^4*i^2 + 25*a^4*b^4*c^4*d^2*g^4*i^2 - 20*a^5
*b^3*c^3*d^3*g^4*i^2 + 5*a^6*b^2*c^2*d^4*g^4*i^2 + 2*a^7*b*c*d^5*g^4*i^2 -
a^8*d^6*g^4*i^2)*x) + 6*(b^4*c^4 - 9*a*b^3*c^3*d + 54*a^2*b^2*c^2*d^2 - 55*
a^3*b*c*d^3 + 9*a^4*d^4 + 30*(b^4*c*d^3 - a*b^3*d^4)*x^3 + 3*(11*b^4*c^2*d^
2 + 8*a*b^3*c*d^3 - 19*a^2*b^2*d^4)*x^2 - 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (
b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b
^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a)^2 - 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (
b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b
^2*c*d^3 + a^3*b*d^4)*x)*log(d*x + c)^2 - (5*b^4*c^3*d - 81*a*b^3*c^2*d^2 +
 57*a^2*b^2*c*d^3 + 19*a^3*b*d^4)*x + 30*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*
c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c
*d^3 + a^3*b*d^4)*x)*log(b*x + a) - 6*(5*b^4*d^4*x^4 + 5*a^3*b*c*d^3 + 5*(b
^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 15*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 5*(3*a^2
*b^2*c*d^3 + a^3*b*d^4)*x - 6*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a
*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*
b*d^4)*x)*log(b*x + a))*log(d*x + c))*n*log(e*(b*x/(d*x + c) + a/(d*x + c))
^n)/(a^3*b^5*c^6*g^4*i^2 - 5*a^4*b^4*c^5*d*g^4*i^2 + 10*a^5*b^3*c^4*d^2*g^4
*i^2 - 10*a^6*b^2*c^3*d^3*g^4*i^2 + 5*a^7*b*c^2*d^4*g^4*i^2 - a^8*c*d^5*g^4
*i^2 + (b^8*c^5*d*g^4*i^2 - 5*a*b^7*c^4*d^2*g^4*i^2 + 10*a^2*b^6*c^3*d^3*g^
4*i^2 - 10*a^3*b^5*c^2*d^4*g^4*i^2 + 5*a^4*b^4*c*d^5*g^4*i^2 - a^5*b^3*d^6*
g^4*i^2)*x^4 + (b^8*c^6*g^4*i^2 - 2*a*b^7*c^5*d*g^4*i^2 - 5*a^2*b^6*c^4*d^2
*g^4*i^2 + 20*a^3*b^5*c^3*d^3*g^4*i^2 - 25*a^4*b^4*c^2*d^4*g^4*i^2 + 14*a^5
*b^3*c*d^5*g^4*i^2 - 3*a^6*b^2*d^6*g^4*i^2)*x^3 + 3*(a*b^7*c^6*g^4*i^2 - 4*
a^2*b^6*c^5*d*g^4*i^2 + 5*a^3*b^5*c^4*d^2*g^4*i^2 - 5*a^5*b^3*c^2*d^4*g^4*i
^2 + 4*a^6*b^2*c*d^5*g^4*i^2 - a^7*b*d^6*g^4*i^2)*x^2 + (3*a^2*b^6*c^6*g^4*
i^2 - 14*a^3*b^5*c^5*d*g^4*i^2 + 25*a^4*b^4*c^4*d^2*g^4*i^2 - 20*a^5*b^3*c^
3*d^3*g^4*i^2 + 5*a^6*b^2*c^2*d^4*g^4*i^2 + 2*a^7*b*c*d^5*g^4*i^2 - a^8*d^6
*g^4*i^2)*x))*B^2 - 2/9*(b^4*c^4 - 9*a*b^3*c^3*d + 54*a^2*b^2*c^2*d^2 - 55*
a^3*b*c*d^3 + 9*a^4*d^4 + 30*(b^4*c*d^3 - a*b^3*d^4)*x^3 + 3*(11*b^4*c^2*d^
2 + 8*a*b^3*c*d^3 - 19*a^2*b^2*d^4)*x^2 - 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (
b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b
^2*c*d^3 + a^3*b*d^4)*x)*log(b*x + a)^2 - 18*(b^4*d^4*x^4 + a^3*b*c*d^3 + (
b^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b
^2*c*d^3 + a^3*b*d^4)*x)*log(d*x + c)^2 - (5*b^4*c^3*d - 81*a*b^3*c^2*d^2 +
 57*a^2*b^2*c*d^3 + 19*a^3*b*d^4)*x + 30*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*
c*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c
*d^3 + a^3*b*d^4)*x)*log(b*x + a) - 6*(5*b^4*d^4*x^4 + 5*a^3*b*c*d^3 + 5*(b
^4*c*d^3 + 3*a*b^3*d^4)*x^3 + 15*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 5*(3*a^2
*b^2*c*d^3 + a^3*b*d^4)*x - 6*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a
*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a^3*
b*d^4)*x)*log(b*x + a))*log(d*x + c))*A*B*n/(a^3*b^5*c^6*g^4*i^2 - 5*a^4*b^
4*c^5*d*g^4*i^2 + 10*a^5*b^3*c^4*d^2*g^4*i^2 - 10*a^6*b^2*c^3*d^3*g^4*i^2 +
 5*a^7*b*c^2*d^4*g^4*i^2 - a^8*c*d^5*g^4*i^2 + (b^8*c^5*d*g^4*i^2 - 5*a*b^7
*c^4*d^2*g^4*i^2 + 10*a^2*b^6*c^3*d^3*g^4*i^2 - 10*a^3*b^5*c^2*d^4*g^4*i^2
+ 5*a^4*b^4*c*d^5*g^4*i^2 - a^5*b^3*d^6*g^4*i^2)*x^4 + (b^8*c^6*g^4*i^2 - 2
*a*b^7*c^5*d*g^4*i^2 - 5*a^2*b^6*c^4*d^2*g^4*i^2 + 20*a^3*b^5*c^3*d^3*g^4*i
^2 - 25*a^4*b^4*c^2*d^4*g^4*i^2 + 14*a^5*b^3*c*d^5*g^4*i^2 - 3*a^6*b^2*d^6*
g^4*i^2)*x^3 + 3*(a*b^7*c^6*g^4*i^2 - 4*a^2*b^6*c^5*d*g^4*i^2 + 5*a^3*b^5*c
^4*d^2*g^4*i^2 - 5*a^5*b^3*c^2*d^4*g^4*i^2 + 4*a^6*b^2*c*d^5*g^4*i^2 - a^7*
b*d^6*g^4*i^2)*x^2 + (3*a^2*b^6*c^6*g^4*i^2 - 14*a^3*b^5*c^5*d*g^4*i^2 + 25
*a^4*b^4*c^4*d^2*g^4*i^2 - 20*a^5*b^3*c^3*d^3*g^4*i^2 + 5*a^6*b^2*c^2*d^4*g
^4*i^2 + 2*a^7*b*c*d^5*g^4*i^2 - a^8*d^6*g^4*i^2)*x) - 1/3*A^2*((12*b^3*d^3
*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 13*a^2*b*c*d^2 + 3*a^3*d^3 + 6*(b^3*c*d^2
```

```
+ 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 8*a*b^2*c*d^2 - 11*a^2*b*d^3)*x)/((b^7*
c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4*a^3*b^4*c*d^4 + a^4*b^3*d^5
)*g^4*i^2*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2*b^5*c^3*d^2 + 14*a^3*b^4*c^2
*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*d^5)*g^4*i^2*x^3 + 3*(a*b^6*c^5 - 3*a^2
*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2*a^4*b^3*c^2*d^3 - 3*a^5*b^2*c*d^4 + a^6*
b*d^5)*g^4*i^2*x^2 + (3*a^2*b^5*c^5 - 11*a^3*b^4*c^4*d + 14*a^4*b^3*c^3*d^2
 - 6*a^5*b^2*c^2*d^3 - a^6*b*c*d^4 + a^7*d^5)*g^4*i^2*x + (a^3*b^4*c^5 - 4*
a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2*d^3 + a^7*c*d^4)*g^4*i^2) +
 12*b*d^3*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*
a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^4*i^2) - 12*b*d^3*log(d*x + c)
/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^
4*b*c*d^4 - a^5*d^5)*g^4*i^2))
```

mupad [B] time = 11.67, size = 3157, normalized size = 4.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^4*(c*i + d*i*x)
^2),x)
```

```
[Out] log(e*((a + b*x)/(c + d*x))^n)*((x*(8*A*B*b^2*c*d - 8*A*B*a*b*d^2 + 12*B^2*
b*d*n*(a*d + b*c) + (16*B^2*a*b*d^2*n)/3 - (16*B^2*b^2*c*d*n)/3) - 6*A*B*a^
2*d^2 + 2*A*B*b^2*c^2 + 6*B^2*a^2*d^2*n + (2*B^2*b^2*c^2*n)/3 + 12*B^2*b^2*
d^2*n*x^2 + 4*A*B*a*b*c*d + (16*B^2*a*b*c*d*n)/3)/(x*(3*a^6*d^4*g^4*i^2 - 9
*a^2*b^4*c^4*g^4*i^2 + 24*a^3*b^3*c^3*d*g^4*i^2 - 18*a^4*b^2*c^2*d^2*g^4*i^
2) - x^2*(9*a*b^5*c^4*g^4*i^2 - 9*a^5*b*d^4*g^4*i^2 - 18*a^2*b^4*c^3*d*g^4*
i^2 + 18*a^4*b^2*c*d^3*g^4*i^2) - x^3*(3*b^6*c^4*g^4*i^2 - 9*a^4*b^2*d^4*g^
4*i^2 + 24*a^3*b^3*c*d^3*g^4*i^2 - 18*a^2*b^4*c^2*d^2*g^4*i^2) + x^4*(3*a^3
*b^3*d^4*g^4*i^2 - 3*b^6*c^3*d*g^4*i^2 + 9*a*b^5*c^2*d^2*g^4*i^2 - 9*a^2*b^
4*c*d^3*g^4*i^2) - 3*a^3*b^3*c^4*g^4*i^2 + 3*a^6*c*d^3*g^4*i^2 + 9*a^4*b^2*
c^3*d*g^4*i^2 - 9*a^5*b*c^2*d^2*g^4*i^2) - (4*d^3*(6*A*B*b + 5*B^2*b*n)*(x*
((a*d + b*c)*((3*a*g^4*i^2*n*(a*d - b*c)^4)/(2*d) + (3*g^4*i^2*n*(a*d - b*c
)^4*(2*a*d - b*c))/(2*d^2)) + (3*a*b*c*g^4*i^2*n*(a*d - b*c)^4)/d) + x^2*(b
*d*((3*a*g^4*i^2*n*(a*d - b*c)^4)/(2*d) + (3*g^4*i^2*n*(a*d - b*c)^4*(2*a*d
 - b*c))/(2*d^2)) + (3*b*g^4*i^2*n*(a*d + b*c)*(a*d - b*c)^4)/d) + a*c*((3*
a*g^4*i^2*n*(a*d - b*c)^4)/(2*d) + (3*g^4*i^2*n*(a*d - b*c)^4*(2*a*d - b*c)
)/(2*d^2)) + 3*b^2*g^4*i^2*n*x^3*(a*d - b*c)^4))/(3*g^4*i^2*n*(a*d - b*c)^3
*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(x*(3*a^6*d^4*g^4*i^2 - 9*a^2*b^4*c^4*g^4*
i^2 + 24*a^3*b^3*c^3*d*g^4*i^2 - 18*a^4*b^2*c^2*d^2*g^4*i^2) - x^2*(9*a*b^5
*c^4*g^4*i^2 - 9*a^5*b*d^4*g^4*i^2 - 18*a^2*b^4*c^3*d*g^4*i^2 + 18*a^4*b^2*
c*d^3*g^4*i^2) - x^3*(3*b^6*c^4*g^4*i^2 - 9*a^4*b^2*d^4*g^4*i^2 + 24*a^3*b^
3*c*d^3*g^4*i^2 - 18*a^2*b^4*c^2*d^2*g^4*i^2) + x^4*(3*a^3*b^3*d^4*g^4*i^2
- 3*b^6*c^3*d*g^4*i^2 + 9*a*b^5*c^2*d^2*g^4*i^2 - 9*a^2*b^4*c*d^3*g^4*i^2)
- 3*a^3*b^3*c^4*g^4*i^2 + 3*a^6*c*d^3*g^4*i^2 + 9*a^4*b^2*c^3*d*g^4*i^2 - 9
*a^5*b*c^2*d^2*g^4*i^2))) - ((27*A^2*a^3*d^3 + 9*A^2*b^3*c^3 + 54*B^2*a^3*d
^3*n^2 + 2*B^2*b^3*c^3*n^2 - 45*A^2*a*b^2*c^2*d + 117*A^2*a^2*b*c*d^2 - 54*
A*B*a^3*d^3*n + 6*A*B*b^3*c^3*n - 25*B^2*a*b^2*c^2*d*n^2 + 299*B^2*a^2*b*c*
d^2*n^2 - 48*A*B*a*b^2*c^2*d*n + 276*A*B*a^2*b*c*d^2*n)/(3*(a*d - b*c)) + (
x^2*(90*A^2*a*b^2*d^3 + 18*A^2*b^3*c*d^2 + 245*B^2*a*b^2*d^3*n^2 + 85*B^2*b
^3*c*d^2*n^2 + 114*A*B*a*b^2*d^3*n + 66*A*B*b^3*c*d^2*n))/(a*d - b*c) + (2*
x^3*(18*A^2*b^3*d^3 + 55*B^2*b^3*d^3*n^2 + 30*A*B*b^3*d^3*n))/(a*d - b*c) +
 (x*(198*A^2*a^2*b*d^3 - 18*A^2*b^3*c^2*d + 144*A^2*a*b^2*c*d^2 + 461*B^2*a
^2*b*d^3*n^2 - 19*B^2*b^3*c^2*d*n^2 + 548*B^2*a*b^2*c*d^2*n^2 + 114*A*B*a^2
*b*d^3*n - 30*A*B*b^3*c^2*d*n + 456*A*B*a*b^2*c*d^2*n))/(3*(a*d - b*c)))/(x
*(9*a^6*d^4*g^4*i^2 - 27*a^2*b^4*c^4*g^4*i^2 + 72*a^3*b^3*c^3*d*g^4*i^2 - 5
4*a^4*b^2*c^2*d^2*g^4*i^2) - x^2*(27*a*b^5*c^4*g^4*i^2 - 27*a^5*b*d^4*g^4*i
^2 - 54*a^2*b^4*c^3*d*g^4*i^2 + 54*a^4*b^2*c*d^3*g^4*i^2) - x^3*(9*b^6*c^4*
g^4*i^2 - 27*a^4*b^2*d^4*g^4*i^2 + 72*a^3*b^3*c*d^3*g^4*i^2 - 54*a^2*b^4*c^
2*d^2*g^4*i^2) + x^4*(9*a^3*b^3*d^4*g^4*i^2 - 9*b^6*c^3*d*g^4*i^2 + 27*a*b^
```

```
5*c^2*d^2*g^4*i^2 - 27*a^2*b^4*c*d^3*g^4*i^2) - 9*a^3*b^3*c^4*g^4*i^2 + 9*a
^6*c*d^3*g^4*i^2 + 27*a^4*b^2*c^3*d*g^4*i^2 - 27*a^5*b*c^2*d^2*g^4*i^2) - l
og(e*((a + b*x)/(c + d*x))^n)^2*(((B^2*(3*a*d + b*c))/(3*(a^2*d^2 + b^2*c^2
 - 2*a*b*c*d)) + (4*B^2*b*d*x)/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)))/(x^3*(b
^3*c*g^4*i^2 + 3*a*b^2*d*g^4*i^2) + x^2*(3*a*b^2*c*g^4*i^2 + 3*a^2*b*d*g^4*
i^2) + x*(a^3*d*g^4*i^2 + 3*a^2*b*c*g^4*i^2) + a^3*c*g^4*i^2 + b^3*d*g^4*i^
2*x^4) - (2*d^3*(6*A*B*b + 5*B^2*b*n))/(3*g^4*i^2*n*(a*d - b*c)^3*(a^2*d^2
+ b^2*c^2 - 2*a*b*c*d)) + (4*B^2*b*d^3*(x*((a*d + b*c)*((a*g^4*i^2*n*(a*d -
 b*c))/(2*d) + (g^4*i^2*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2)) + (a*b*c*g^4*
i^2*n*(a*d - b*c))/d) + x^2*(b*d*((a*g^4*i^2*n*(a*d - b*c))/(2*d) + (g^4*i^
2*n*(a*d - b*c)*(2*a*d - b*c))/(2*d^2)) + (b*g^4*i^2*n*(a*d + b*c)*(a*d - b
*c))/d) + a*c*((a*g^4*i^2*n*(a*d - b*c))/(2*d) + (g^4*i^2*n*(a*d - b*c)*(2*
a*d - b*c))/(2*d^2)) + b^2*g^4*i^2*n*x^3*(a*d - b*c)))/(g^4*i^2*n*(a*d - b*
c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(x^3*(b^3*c*g^4*i^2 + 3*a*b^2*d*g^4*i^
2) + x^2*(3*a*b^2*c*g^4*i^2 + 3*a^2*b*d*g^4*i^2) + x*(a^3*d*g^4*i^2 + 3*a^2
*b*c*g^4*i^2) + a^3*c*g^4*i^2 + b^3*d*g^4*i^2*x^4))) - (b*d^3*atan((b*d^3*(
18*A^2 + 55*B^2*n^2 + 30*A*B*n)*(9*a^5*d^5*g^4*i^2 + 9*b^5*c^5*g^4*i^2 - 27
*a*b^4*c^4*d*g^4*i^2 - 27*a^4*b*c*d^4*g^4*i^2 + 18*a^2*b^3*c^3*d^2*g^4*i^2
+ 18*a^3*b^2*c^2*d^3*g^4*i^2)*2i)/(9*g^4*i^2*(a*d - b*c)^5*(36*A^2*b*d^3 +
110*B^2*b*d^3*n^2 + 60*A*B*b*d^3*n)) + (b^2*d^4*x*(18*A^2 + 55*B^2*n^2 + 30
*A*B*n)*(a^4*d^4*g^4*i^2 + b^4*c^4*g^4*i^2 - 4*a*b^3*c^3*d*g^4*i^2 - 4*a^3*
b*c*d^3*g^4*i^2 + 6*a^2*b^2*c^2*d^2*g^4*i^2)*4i)/(g^4*i^2*(a*d - b*c)^5*(36
*A^2*b*d^3 + 110*B^2*b*d^3*n^2 + 60*A*B*b*d^3*n)))*(18*A^2 + 55*B^2*n^2 + 3
0*A*B*n)*4i)/(9*g^4*i^2*(a*d - b*c)^5) + (4*B^2*b*d^3*log(e*((a + b*x)/(c +
 d*x))^n)^3)/(3*g^4*i^2*n*(a*d - b*c)^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**4/(d*i*x+c*i)**2
,x)
```

```
[Out] Timed out
```

3.202 $\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ci+dix)^3}\,dx$

Optimal. Leaf size=676

$$\frac{6b^2Bg^3n(bc-ad)\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^4i^3}+\frac{3b^2g^3(bc-ad)\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{d^4i^3}$$

```
[Out] 1/4*B^2*(-a*d+b*c)*g^3*n^2*(b*x+a)^2/d^2/i^3/(d*x+c)^2-4*A*b*B*(-a*d+b*c)*g
^3*n*(b*x+a)/d^3/i^3/(d*x+c)+4*b*B^2*(-a*d+b*c)*g^3*n^2*(b*x+a)/d^3/i^3/(d*
x+c)-4*b*B^2*(-a*d+b*c)*g^3*n*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/d^3/i^3/(d*
x+c)-1/2*B*(-a*d+b*c)*g^3*n*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/d^2/i
^3/(d*x+c)^2+b^2*g^3*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d^3/i^3+1/2*
(-a*d+b*c)*g^3*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d^2/i^3/(d*x+c)^
2+2*b*(-a*d+b*c)*g^3*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d^3/i^3/(d*x
+c)+2*b^2*B*(-a*d+b*c)*g^3*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*ln((-a*d+b*c)/
b/(d*x+c))/d^4/i^3+3*b^2*(-a*d+b*c)*g^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2*l
n((-a*d+b*c)/b/(d*x+c))/d^4/i^3+2*b^2*B^2*(-a*d+b*c)*g^3*n^2*polylog(2,d*(b
*x+a)/b/(d*x+c))/d^4/i^3+6*b^2*B*(-a*d+b*c)*g^3*n*(A+B*ln(e*((b*x+a)/(d*x+c
))^n))*polylog(2,d*(b*x+a)/b/(d*x+c))/d^4/i^3-6*b^2*B^2*(-a*d+b*c)*g^3*n^2*
polylog(3,d*(b*x+a)/b/(d*x+c))/d^4/i^3
```

Rubi [B] time = 6.20, antiderivative size = 2026, normalized size of antiderivative = 3.00, number of steps used = 117, number of rules used = 26, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.578, Rules used = {2528, 2523, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 2525, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x
)^3,x]
```

```
[Out] (B^2*(b*c - a*d)^3*g^3*n^2)/(4*d^4*i^3*(c + d*x)^2) - (9*b*B^2*(b*c - a*d)^
2*g^3*n^2)/(2*d^4*i^3*(c + d*x)) - (9*b^2*B^2*(b*c - a*d)*g^3*n^2*Log[a + b
*x])/(2*d^4*i^3) - (a*b^2*B^2*g^3*n^2*Log[a + b*x]^2)/(d^3*i^3) - (5*b^2*B^
2*(b*c - a*d)*g^3*n^2*Log[a + b*x]^2)/(2*d^4*i^3) - (B*(b*c - a*d)^3*g^3*n*
(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^4*i^3*(c + d*x)^2) + (5*b*B*(b
*c - a*d)^2*g^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^4*i^3*(c + d*x
)) + (2*a*b^2*B*g^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/
(d^3*i^3) + (5*b^2*B*(b*c - a*d)*g^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)
/(c + d*x))^n]))/(d^4*i^3) + (b^3*g^3*x*(A + B*Log[e*((a + b*x)/(c + d*x))^
n])^2)/(d^3*i^3) + ((b*c - a*d)^3*g^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n]
)^2)/(2*d^4*i^3*(c + d*x)^2) - (3*b*(b*c - a*d)^2*g^3*(A + B*Log[e*((a + b*
x)/(c + d*x))^n])^2)/(d^4*i^3*(c + d*x)) + (9*b^2*B^2*(b*c - a*d)*g^3*n^2*L
og[c + d*x])/(2*d^4*i^3) + (6*A*b^2*B*(b*c - a*d)*g^3*n*Log[-((d*(a + b*x))
/(b*c - a*d))]*Log[c + d*x])/(d^4*i^3) + (2*b^3*B^2*c*g^3*n^2*Log[-((d*(a +
 b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4*i^3) + (5*b^2*B^2*(b*c - a*d)*g^3*n
^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^4*i^3) + (3*b^2*B^2*(
b*c - a*d)*g^3*Log[(a + b*x)^n]^2*Log[c + d*x])/(d^4*i^3) - (2*b^3*B*c*g^3*
n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(d^4*i^3) - (5*b^2*B
*(b*c - a*d)*g^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(d^
4*i^3) - (3*b^2*(b*c - a*d)*g^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Lo
g[c + d*x])/(d^4*i^3) - (3*A*b^2*B*(b*c - a*d)*g^3*n*Log[c + d*x]^2)/(d^4*i
^3) - (b^3*B^2*c*g^3*n^2*Log[c + d*x]^2)/(d^4*i^3) - (5*b^2*B^2*(b*c - a*d)
*g^3*n^2*Log[c + d*x]^2)/(2*d^4*i^3) + (3*b^2*B^2*(b*c - a*d)*g^3*n^2*Log[a
```

```
 + b*x]*Log[c + d*x]^2)/(d^4*i^3) - (3*b^2*B^2*(b*c - a*d)*g^3*n*Log[e*((a
+ b*x)/(c + d*x))^n]*Log[c + d*x]^2)/(d^4*i^3) - (b^2*B^2*(b*c - a*d)*g^3*n
^2*Log[c + d*x]^3)/(d^4*i^3) + (2*a*b^2*B^2*g^3*n^2*Log[a + b*x]*Log[(b*(c
+ d*x))/(b*c - a*d)])/(d^3*i^3) + (5*b^2*B^2*(b*c - a*d)*g^3*n^2*Log[a + b*
x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4*i^3) - (3*b^2*B^2*(b*c - a*d)*g^3*L
og[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^4*i^3) + (6*b^2*B^2*(b
*c - a*d)*g^3*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)])/(d^4*i^3) +
(3*b^2*B^2*(b*c - a*d)*g^3*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/(d^4*i^3) -
(3*b^2*B^2*(b*c - a*d)*g^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^
(-n)]^2)/(d^4*i^3) - (6*b^2*B^2*(b*c - a*d)*g^3*n*Log[-((d*(a + b*x))/(b*c
- a*d))]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] +
Log[(c + d*x)^(-n)]))/(d^4*i^3) + (2*a*b^2*B^2*g^3*n^2*PolyLog[2, -((d*(a +
 b*x))/(b*c - a*d))])/(d^3*i^3) + (5*b^2*B^2*(b*c - a*d)*g^3*n^2*PolyLog[2,
 -((d*(a + b*x))/(b*c - a*d))])/(d^4*i^3) - (6*b^2*B^2*(b*c - a*d)*g^3*n*Lo
g[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^4*i^3) + (6*A*b
^2*B*(b*c - a*d)*g^3*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^3) + (
2*b^3*B^2*c*g^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^3) + (5*b
^2*B^2*(b*c - a*d)*g^3*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^3)
 + (6*b^2*B^2*(b*c - a*d)*g^3*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x)
)/(b*c - a*d)])/(d^4*i^3) - (6*b^2*B^2*(b*c - a*d)*g^3*n*(Log[(a + b*x)^n]
- Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (b*(c +
d*x))/(b*c - a*d)])/(d^4*i^3) + (6*b^2*B^2*(b*c - a*d)*g^3*n^2*PolyLog[3, -
((d*(a + b*x))/(b*c - a*d))])/(d^4*i^3) + (6*b^2*B^2*(b*c - a*d)*g^3*n^2*Po
lyLog[3, (b*(c + d*x))/(b*c - a*d)])/(d^4*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(202c+202dx)^3}\,dx=\int\left(\frac{b^3g^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8242408d^3}+\frac{(-bc+ad)^3g^3\left(A+B\log\left(e\left(\cdots\right.\right.\right.}{8242408d^3(c+dx)^3}\cdots\right.$$

$$=\frac{\left(b^3g^3\right)\int\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2\,dx}{8242408d^3}-\frac{\left(3b^2(bc-ad)g^3\right)\int\frac{\left(A+B\log\cdots\right.}{\cdots}}{8242408d^3}\cdots$$

$$=\frac{b^3g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8242408d^3}+\frac{(bc-ad)^3g^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\cdots\right.\right.\right.}{16484816d^4(c+dx)^2}\cdots$$

$$=\frac{b^3g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8242408d^3}+\frac{(bc-ad)^3g^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\cdots\right.\right.\right.}{16484816d^4(c+dx)^2}\cdots$$

$$=\frac{b^3g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8242408d^3}+\frac{(bc-ad)^3g^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\cdots\right.\right.\right.}{16484816d^4(c+dx)^2}\cdots$$

$$=\frac{b^3g^3x\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8242408d^3}+\frac{(bc-ad)^3g^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\cdots\right.\right.\right.}{16484816d^4(c+dx)^2}\cdots$$

$$=-\frac{B(bc-ad)^3g^3n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{16484816d^4(c+dx)^2}+\frac{5bB(bc-ad)^2g^3n\left(A+\cdots\right.}{8242408d^4\cdots}\cdots$$

$$=-\frac{B(bc-ad)^3g^3n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{16484816d^4(c+dx)^2}+\frac{5bB(bc-ad)^2g^3n\left(A+\cdots\right.}{8242408d^4\cdots}\cdots$$

$$=-\frac{B(bc-ad)^3g^3n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{16484816d^4(c+dx)^2}+\frac{5bB(bc-ad)^2g^3n\left(A+\cdots\right.}{8242408d^4\cdots}\cdots$$

$$=\frac{B^2(bc-ad)^3g^3n^2}{32969632d^4(c+dx)^2}-\frac{9bB^2(bc-ad)^2g^3n^2}{16484816d^4(c+dx)}-\frac{9b^2B^2(bc-ad)g^3n^2}{16484816\cdots}\cdots$$

$$=\frac{B^2(bc-ad)^3g^3n^2}{32969632d^4(c+dx)^2}-\frac{9bB^2(bc-ad)^2g^3n^2}{16484816d^4(c+dx)}-\frac{9b^2B^2(bc-ad)g^3n^2}{16484816\cdots}\cdots$$

$$=\frac{B^2(bc-ad)^3g^3n^2}{32969632d^4(c+dx)^2}-\frac{9bB^2(bc-ad)^2g^3n^2}{16484816d^4(c+dx)}-\frac{9b^2B^2(bc-ad)g^3n^2}{16484816\cdots}\cdots$$

$$=\frac{B^2(bc-ad)^3g^3n^2}{32969632d^4(c+dx)^2}-\frac{9bB^2(bc-ad)^2g^3n^2}{16484816d^4(c+dx)}-\frac{9b^2B^2(bc-ad)g^3n^2}{16484816\cdots}\cdots$$

$$=\frac{B^2(bc-ad)^3g^3n^2}{32969632d^4(c+dx)^2}-\frac{9bB^2(bc-ad)^2g^3n^2}{16484816d^4(c+dx)}-\frac{9b^2B^2(bc-ad)g^3n^2}{16484816\cdots}\cdots$$

$$=\frac{B^2(bc-ad)^3g^3n^2}{\cdots}-\frac{9bB^2(bc-ad)^2g^3n^2}{\cdots}-\frac{9b^2B^2(bc-ad)g^3n^2}{\cdots}\cdots$$

Mathematica [B] time = 9.80, size = 5730, normalized size = 8.48

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i +
 d*i*x)^3,x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2b^3g^3x^3 + 3\,A^2ab^2g^3x^2 + 3\,A^2a^2bg^3x + A^2a^3g^3 + \left(B^2b^3g^3x^3 + 3\,B^2ab^2g^3x^2 + 3\,B^2a^2bg^3x + B^2a^3g}{d^3i^3x^3 + 3\,cd^2i^3x^2 + 3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x,
 algorithm="fricas")
```

```
[Out] integral((A^2*b^3*g^3*x^3 + 3*A^2*a*b^2*g^3*x^2 + 3*A^2*a^2*b*g^3*x + A^2*a
^3*g^3 + (B^2*b^3*g^3*x^3 + 3*B^2*a*b^2*g^3*x^2 + 3*B^2*a^2*b*g^3*x + B^2*a
^3*g^3)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*B*b^3*g^3*x^3 + 3*A*B*a*b^2
*g^3*x^2 + 3*A*B*a^2*b*g^3*x + A*B*a^3*g^3)*log(e*((b*x + a)/(d*x + c))^n))
/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^{3} \left(B \ln \left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right) + A\right)^{2}}{\left(dix + ci\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)
```

```
[Out] int((b*g*x+a*g)^3*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^3*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x,
 algorithm="maxima")
```

```
[Out] 3/2*A*B*a^2*b*g^3*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 -
a*d^5)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^
```

```
3) + 2*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4
)*i^3) - 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2
*d^4)*i^3)) + 1/2*A*B*a^3*g^3*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)
*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b
^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x +
 c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) - 1/2*A^2*b^3*g^3*((6*c^2*d*
x + 5*c^3)/(d^6*i^3*x^2 + 2*c*d^5*i^3*x + c^2*d^4*i^3) - 2*x/(d^3*i^3) + 6*
c*log(d*x + c)/(d^4*i^3)) + 3/2*A^2*a*b^2*g^3*((4*c*d*x + 3*c^2)/(d^5*i^3*x
^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2*log(d*x + c)/(d^3*i^3)) - 3*(2*d*x +
c)*A*B*a^2*b*g^3*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^4*i^3*x^2 + 2*c*
d^3*i^3*x + c^2*d^2*i^3) - 3/2*(2*d*x + c)*A^2*a^2*b*g^3/(d^4*i^3*x^2 + 2*c
*d^3*i^3*x + c^2*d^2*i^3) - A*B*a^3*g^3*log(e*(b*x/(d*x + c) + a/(d*x + c))
^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A^2*a^3*g^3/(d^3*i^3*x^
2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 1/2*(2*B^2*b^3*d^3*g^3*x^3 + 4*B^2*b^3*c*d
^2*g^3*x^2 - 2*(2*b^3*c^2*d*g^3 - 6*a*b^2*c*d^2*g^3 + 3*a^2*b*d^3*g^3)*B^2*
x - (5*b^3*c^3*g^3 - 9*a*b^2*c^2*d*g^3 + 3*a^2*b*c*d^2*g^3 + a^3*d^3*g^3)*B
^2 - 6*((b^3*c*d^2*g^3 - a*b^2*d^3*g^3)*B^2*x^2 + 2*(b^3*c^2*d*g^3 - a*b^2*
c*d^2*g^3)*B^2*x + (b^3*c^3*g^3 - a*b^2*c^2*d*g^3)*B^2)*log(d*x + c))*log((
d*x + c)^n)^2/(d^6*i^3*x^2 + 2*c*d^5*i^3*x + c^2*d^4*i^3) - integrate(-(3*B
^2*a^2*b*d^3*g^3*x*log(e)^2 + B^2*a^3*d^3*g^3*log(e)^2 + (B^2*b^3*d^3*g^3*l
og(e)^2 + 2*A*B*b^3*d^3*g^3*log(e))*x^3 + 3*(B^2*a*b^2*d^3*g^3*log(e)^2 + 2
*A*B*a*b^2*d^3*g^3*log(e))*x^2 + (B^2*b^3*d^3*g^3*x^3 + 3*B^2*a*b^2*d^3*g^3
*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)*log((b*x + a)^n)^2 + 2*(3*B
^2*a^2*b*d^3*g^3*x*log(e) + B^2*a^3*d^3*g^3*log(e) + (B^2*b^3*d^3*g^3*log(e
) + A*B*b^3*d^3*g^3)*x^3 + 3*(B^2*a*b^2*d^3*g^3*log(e) + A*B*a*b^2*d^3*g^3)
*x^2)*log((b*x + a)^n) + (2*(2*b^3*c^2*d*g^3*n - 6*a*b^2*c*d^2*g^3*n + 3*(g
^3*n - g^3*log(e))*a^2*b*d^3)*B^2*x - 2*(A*B*b^3*d^3*g^3 + (g^3*n + g^3*log
(e))*B^2*b^3*d^3)*x^3 + (5*b^3*c^3*g^3*n - 9*a*b^2*c^2*d*g^3*n + 3*a^2*b*c*
d^2*g^3*n + (g^3*n - 2*g^3*log(e))*a^3*d^3)*B^2 - 2*(3*A*B*a*b^2*d^3*g^3 +
(2*b^3*c*d^2*g^3*n + 3*a*b^2*d^3*g^3*log(e))*B^2)*x^2 + 6*((b^3*c*d^2*g^3*n
 - a*b^2*d^3*g^3*n)*B^2*x^2 + 2*(b^3*c^2*d*g^3*n - a*b^2*c*d^2*g^3*n)*B^2*x
 + (b^3*c^3*g^3*n - a*b^2*c^2*d*g^3*n)*B^2)*log(d*x + c) - 2*(B^2*b^3*d^3*g
^3*x^3 + 3*B^2*a*b^2*d^3*g^3*x^2 + 3*B^2*a^2*b*d^3*g^3*x + B^2*a^3*d^3*g^3)
*log((b*x + a)^n))*log((d*x + c)^n))/(d^6*i^3*x^3 + 3*c*d^5*i^3*x^2 + 3*c^2
*d^4*i^3*x + c^3*d^3*i^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^3\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^2}{{\left(c\,i+d\,i\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^3,x)
```

```
[Out] int(((a*g + b*g*x)^3*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**3*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**3
,x)
```

```
[Out] Timed out
```

3.203 $\int \frac{(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ci+dix)^3}\,dx$

Optimal. Leaf size=441

$$-\frac{2b^2Bg^2n\text{Li}_2\left(\frac{d(a+bx)}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^3i^3}-\frac{b^2g^2\log\left(\frac{bc-ad}{b(c+dx)}\right)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{d^3i^3}-\frac{bg^2(a+bx)\left(B\log\ldots\right.}{d^2i^3}$$

```
[Out] -1/4*B^2*g^2*n^2*(b*x+a)^2/d/i^3/(d*x+c)^2+2*A*b*B*g^2*n*(b*x+a)/d^2/i^3/(d
*x+c)-2*b*B^2*g^2*n^2*(b*x+a)/d^2/i^3/(d*x+c)+2*b*B^2*g^2*n*(b*x+a)*ln(e*((
b*x+a)/(d*x+c))^n)/d^2/i^3/(d*x+c)+1/2*B*g^2*n*(b*x+a)^2*(A+B*ln(e*((b*x+a)
/(d*x+c))^n))/d/i^3/(d*x+c)^2-1/2*g^2*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))
^n))^2/d/i^3/(d*x+c)^2-b*g^2*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/d^2/
i^3/(d*x+c)-b^2*g^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2*ln((-a*d+b*c)/b/(d*x+
c))/d^3/i^3-2*b^2*B*g^2*n*(A+B*ln(e*((b*x+a)/(d*x+c))^n))*polylog(2,d*(b*x+
a)/b/(d*x+c))/d^3/i^3+2*b^2*B^2*g^2*n^2*polylog(3,d*(b*x+a)/b/(d*x+c))/d^3/
i^3
```

Rubi [B] time = 5.12, antiderivative size = 1435, normalized size of antiderivative = 3.25, number of steps used = 97, number of rules used = 25, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.556, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44, 6688, 6742, 2500, 2433, 2375, 2317, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x
)^3,x]
```

```
[Out] -(B^2*(b*c - a*d)^2*g^2*n^2)/(4*d^3*i^3*(c + d*x)^2) + (5*b*B^2*(b*c - a*d)
*g^2*n^2)/(2*d^3*i^3*(c + d*x)) + (5*b^2*B^2*g^2*n^2*Log[a + b*x])/(2*d^3*i
^3) + (3*b^2*B^2*g^2*n^2*Log[a + b*x]^2)/(2*d^3*i^3) + (B*(b*c - a*d)^2*g^2
*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^3*i^3*(c + d*x)^2) - (3*b*B
*(b*c - a*d)*g^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^3*i^3*(c + d*
x)) - (3*b^2*B*g^2*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(
d^3*i^3) - ((b*c - a*d)^2*g^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*
d^3*i^3*(c + d*x)^2) + (2*b*(b*c - a*d)*g^2*(A + B*Log[e*((a + b*x)/(c + d*
x))^n])^2)/(d^3*i^3*(c + d*x)) - (5*b^2*B^2*g^2*n^2*Log[c + d*x])/(2*d^3*i^
3) - (2*A*b^2*B*g^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^3*
i^3) - (3*b^2*B^2*g^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(
d^3*i^3) - (b^2*B^2*g^2*Log[(a + b*x)^n]^2*Log[c + d*x])/(d^3*i^3) + (3*b^2
*B*g^2*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(d^3*i^3) + (
b^2*g^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/(d^3*i^3) +
(A*b^2*B*g^2*n*Log[c + d*x]^2)/(d^3*i^3) + (3*b^2*B^2*g^2*n^2*Log[c + d*x]^
2)/(2*d^3*i^3) - (b^2*B^2*g^2*n^2*Log[a + b*x]*Log[c + d*x]^2)/(d^3*i^3) +
(b^2*B^2*g^2*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2)/(d^3*i^3) + (
b^2*B^2*g^2*n^2*Log[c + d*x]^3)/(3*d^3*i^3) - (3*b^2*B^2*g^2*n^2*Log[a + b*
x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^3*i^3) + (b^2*B^2*g^2*Log[(a + b*x)^n
]^2*Log[(b*(c + d*x))/(b*c - a*d)])/(d^3*i^3) - (2*b^2*B^2*g^2*n*Log[a + b*
x]*Log[c + d*x]*Log[(c + d*x)^(-n)])/(d^3*i^3) - (b^2*B^2*g^2*Log[a + b*x]*
Log[(c + d*x)^(-n)]^2)/(d^3*i^3) + (b^2*B^2*g^2*Log[-((d*(a + b*x))/(b*c -
a*d))]*Log[(c + d*x)^(-n)]^2)/(d^3*i^3) + (2*b^2*B^2*g^2*n*Log[-((d*(a + b*
x))/(b*c - a*d))]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*
x))^n] + Log[(c + d*x)^(-n)]))/(d^3*i^3) - (3*b^2*B^2*g^2*n^2*PolyLog[2, -(
(d*(a + b*x))/(b*c - a*d))])/(d^3*i^3) + (2*b^2*B^2*g^2*n*Log[(a + b*x)^n]*
PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i^3) - (2*A*b^2*B*g^2*n*Poly
```

```
Log[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^3) - (3*b^2*B^2*g^2*n^2*PolyLog[2
, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^3) - (2*b^2*B^2*g^2*n*Log[(c + d*x)^(-
n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^3) + (2*b^2*B^2*g^2*n*(Lo
g[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*Poly
Log[2, (b*(c + d*x))/(b*c - a*d)])/(d^3*i^3) - (2*b^2*B^2*g^2*n^2*PolyLog[3
, -((d*(a + b*x))/(b*c - a*d))])/(d^3*i^3) - (2*b^2*B^2*g^2*n^2*PolyLog[3,
(b*(c + d*x))/(b*c - a*d)])/(d^3*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
```

```
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
```

```
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(ag+bgx)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(203c+203dx)^3}\,dx = \int \left(\frac{(-bc+ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8365427d^2(c+dx)^3} - \frac{2b(bc-ad)g^2\left(A+\cdots\right.}{8365427d^2\cdots} \cdots \right.$$

$$= \frac{\left(b^2g^2\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}\,dx}{8365427d^2} - \frac{\left(2b(bc-ad)g^2\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\cdots\right.\right.}{(c+dx)^2}\cdots}{8365427d^2} \cdots$$

$$= -\frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{16730854d^3(c+dx)^2} + \frac{2b(bc-ad)g^2\left(A+B\log\cdots\right.}{8365427d^3(c+\cdots} \cdots$$

$$= -\frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{16730854d^3(c+dx)^2} + \frac{2b(bc-ad)g^2\left(A+B\log\cdots\right.}{8365427d^3(c+\cdots} \cdots$$

$$= -\frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{16730854d^3(c+dx)^2} + \frac{2b(bc-ad)g^2\left(A+B\log\cdots\right.}{8365427d^3(c+\cdots} \cdots$$

$$= -\frac{(bc-ad)^2g^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{16730854d^3(c+dx)^2} + \frac{2b(bc-ad)g^2\left(A+B\log\cdots\right.}{8365427d^3(c+\cdots} \cdots$$

$$= \frac{B(bc-ad)^2g^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{16730854d^3(c+dx)^2} - \frac{3bB(bc-ad)g^2n\left(A+B\cdots\right.}{8365427d^3(c\cdots} \cdots$$

$$= \frac{B(bc-ad)^2g^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{16730854d^3(c+dx)^2} - \frac{3bB(bc-ad)g^2n\left(A+B\cdots\right.}{8365427d^3(c\cdots} \cdots$$

$$= \frac{B(bc-ad)^2g^2n\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{16730854d^3(c+dx)^2} - \frac{3bB(bc-ad)g^2n\left(A+B\cdots\right.}{8365427d^3(c\cdots} \cdots$$

$$= -\frac{B^2(bc-ad)^2g^2n^2}{33461708d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2n^2}{16730854d^3(c+dx)} + \frac{5b^2B^2g^2n^2\log(a\cdots}{16730854d^3\cdots} \cdots$$

$$= -\frac{B^2(bc-ad)^2g^2n^2}{33461708d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2n^2}{16730854d^3(c+dx)} + \frac{5b^2B^2g^2n^2\log(a\cdots}{16730854d^3\cdots} \cdots$$

$$= -\frac{B^2(bc-ad)^2g^2n^2}{33461708d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2n^2}{16730854d^3(c+dx)} + \frac{5b^2B^2g^2n^2\log(a\cdots}{16730854d^3\cdots} \cdots$$

$$= -\frac{B^2(bc-ad)^2g^2n^2}{33461708d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2n^2}{16730854d^3(c+dx)} + \frac{5b^2B^2g^2n^2\log(a\cdots}{16730854d^3\cdots} \cdots$$

$$= -\frac{B^2(bc-ad)^2g^2n^2}{33461708d^3(c+dx)^2} + \frac{5bB^2(bc-ad)g^2n^2}{16730854d^3(c+dx)} + \frac{5b^2B^2g^2n^2\log(a\cdots}{16730854d^3\cdots} \cdots$$

$$= -\frac{B^2(bc-ad)^2g^2n^2}{\cdots} + \frac{5bB^2(bc-ad)g^2n^2}{\cdots} + \frac{5b^2B^2g^2n^2\log(a\cdots}{\cdots} \cdots$$

Mathematica [B] time = 6.59, size = 3172, normalized size = 7.19

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i +
 d*i*x)^3,x]
```

```
[Out] (g^2*((-2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a
+ b*x)/(c + d*x)])^2)/(c + d*x)^2 + (8*b*(b*c - a*d)*(A + B*Log[e*((a + b*x
)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2)/(c + d*x) + 4*b^2*(A + B
*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])^2*Log[c + d
*x] + (4*a*b*B*d*n*(-A - B*Log[e*((a + b*x)/(c + d*x))^n] + B*n*Log[(a + b*
x)/(c + d*x)])*(-(b^2*c^3) + 4*a*b*c^2*d - 3*a^2*c*d^2 - 2*b^2*c^2*d*x + 6*
a*b*c*d^2*x - 4*a^2*d^3*x - 2*b*(b*c - 2*a*d)*(c + d*x)^2*Log[a + b*x] + 2*
(b*c - a*d)^2*(c + 2*d*x)*Log[(a + b*x)/(c + d*x)] + 2*b^2*c^3*Log[c + d*x]
 - 4*a*b*c^2*d*Log[c + d*x] + 4*b^2*c^2*d*x*Log[c + d*x] - 8*a*b*c*d^2*x*Lo
g[c + d*x] + 2*b^2*c*d^2*x^2*Log[c + d*x] - 4*a*b*d^3*x^2*Log[c + d*x]))/((
b*c - a*d)^2*(c + d*x)^2) + (2*a^2*B*d^2*n*(-A - B*Log[e*((a + b*x)/(c + d*
x))^n] + B*n*Log[(a + b*x)/(c + d*x)])*(-(b^2*c^2) + 4*a*b*c*d - a^2*d^2 +
2*b^2*c*d*x + 2*a*b*d^2*x + 2*b^2*d^2*x^2 - 2*b^2*(c + d*x)^2*Log[a/b + x]
+ 2*(b*c - a*d)^2*Log[(a + b*x)/(c + d*x)] + 2*b^2*c^2*Log[(b*(c + d*x))/(b
*c - a*d)] + 4*b^2*c*d*x*Log[(b*(c + d*x))/(b*c - a*d)] + 2*b^2*d^2*x^2*Log
[(b*(c + d*x))/(b*c - a*d)]))/((b*c - a*d)^2*(c + d*x)^2) + 2*b^2*B*n*(A +
B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])*(-2*Log[c/
d + x]^2 - (8*c*(1 + Log[c/d + x]))/(c + d*x) + (c^2*(1 + 2*Log[c/d + x]))/
(c + d*x)^2 + 8*c*(Log[a/b + x]/(c + d*x) + (b*(Log[a + b*x] - Log[c + d*x]
))/(-(b*c) + a*d)) + 2*(-Log[a/b + x] + Log[c/d + x] + Log[(a + b*x)/(c + d
*x)])*((c*(3*c + 4*d*x))/(c + d*x)^2 + 2*Log[c + d*x]) + (2*c^2*(-Log[a/b +
 x] + (b*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[
c + d*x]))/(b*c - a*d)^2))/(c + d*x)^2 + 4*(Log[a/b + x]*Log[(b*(c + d*x))/
(b*c - a*d)] + PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)])) + (2*a*b*B^2*d*n^
2*(2*c*Log[(a + b*x)/(c + d*x)]^2 - 4*(c + d*x)*Log[(a + b*x)/(c + d*x)]^2
- (4*(c + d*x)*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a + b*x] - 2*(b*c - a*d)*
Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*Log[(a + b*x)/(c + d*
x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(a + b*x)/(c + d*x)]*L
og[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b*x]*(Log[a + b*x] - 2
*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d
)]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b
*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/
(b*c - a*d)])))/(b*c - a*d) + (c*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d*x)
 + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*(b*c - a*d)^2*Log[(a + b*x)/(c + d*x)
] - 4*b*(b*c - a*d)*(c + d*x)*Log[(a + b*x)/(c + d*x)] - 4*b^2*(c + d*x)^2*
Log[a + b*x]*Log[(a + b*x)/(c + d*x)] - 2*b^2*(c + d*x)^2*Log[c + d*x] + 4*
b*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x
]) - 4*b^2*(c + d*x)^2*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*
x)] + 2*b^2*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(
b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*(c + d*x
)^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] +
Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))
)/(b*c - a*d)^2))/(c + d*x)^2 - (a^2*B^2*d^2*n^2*((b*c - a*d)^2 + 2*b*(b*c
- a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*(b*c - a*d)^2*Log[(a
+ b*x)/(c + d*x)] - 4*b*(b*c - a*d)*(c + d*x)*Log[(a + b*x)/(c + d*x)] - 4*
b^2*(c + d*x)^2*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] + 2*(b*c - a*d)^2*Log
[(a + b*x)/(c + d*x)]^2 - 2*b^2*(c + d*x)^2*Log[c + d*x] + 4*b*(c + d*x)*(b
*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]) - 4*b^2*(c
+ d*x)^2*Log[(a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*b^2*(c
 + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) -
 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*(c + d*x)^2*(Log[(b*c
```

```
- a*d)/(b*c + b*d*x)]*(2*Log[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d
)/(b*c + b*d*x)]) - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)
^2*(c + d*x)^2) - 2*b^2*B^2*n^2*((c^2*Log[(a + b*x)/(c + d*x)]^2)/(c + d*x)
^2 - (4*c*Log[(a + b*x)/(c + d*x)]^2)/(c + d*x) + 2*Log[(a + b*x)/(c + d*x)
]^2*Log[(b*c - a*d)/(b*c + b*d*x)] + 4*Log[(a + b*x)/(c + d*x)]*PolyLog[2,
(d*(a + b*x))/(b*(c + d*x))] - (4*c*(2*b*c - 2*a*d + 2*b*(c + d*x)*Log[a +
b*x] - 2*(b*c - a*d)*Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[a + b*x]*
Log[(a + b*x)/(c + d*x)] - 2*b*(c + d*x)*Log[c + d*x] - 2*b*(c + d*x)*Log[(
a + b*x)/(c + d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + b*(c + d*x)*(Log[a + b
*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a
+ b*x))/(-(b*c) + a*d)]) + b*(c + d*x)*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*L
og[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*Poly
Log[2, (b*(c + d*x))/(b*c - a*d)])))/((b*c - a*d)*(c + d*x)) + (c^2*((b*c -
 a*d)^2 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*(b
*c - a*d)^2*Log[(a + b*x)/(c + d*x)] - 4*b*(b*c - a*d)*(c + d*x)*Log[(a + b
*x)/(c + d*x)] - 4*b^2*(c + d*x)^2*Log[a + b*x]*Log[(a + b*x)/(c + d*x)] -
2*b^2*(c + d*x)^2*Log[c + d*x] + 4*b*(c + d*x)*(b*c - a*d + b*(c + d*x)*Log
[a + b*x] - b*(c + d*x)*Log[c + d*x]) - 4*b^2*(c + d*x)^2*Log[(a + b*x)/(c
+ d*x)]*Log[(b*c - a*d)/(b*c + b*d*x)] + 2*b^2*(c + d*x)^2*(Log[a + b*x]*(L
og[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x)
)/(-(b*c) + a*d)]) + 2*b^2*(c + d*x)^2*(Log[(b*c - a*d)/(b*c + b*d*x)]*(2*L
og[(d*(a + b*x))/(-(b*c) + a*d)] + Log[(b*c - a*d)/(b*c + b*d*x)]) - 2*Poly
Log[2, (b*(c + d*x))/(b*c - a*d)])))/(2*(b*c - a*d)^2*(c + d*x)^2) - 4*Poly
Log[3, (d*(a + b*x))/(b*(c + d*x))])))/(4*d^3*i^3)
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{A^2b^2g^2x^2 + 2\,A^2abg^2x + A^2a^2g^2 + \left(B^2b^2g^2x^2 + 2\,B^2abg^2x + B^2a^2g^2\right)\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^2 + 2\left(ABb^2g^2x^2 \cdots\right.}{d^3i^3x^3 + 3\,cd^2i^3x^2 + 3\,c^2di^3x + c^3i^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x,
 algorithm="fricas")
```

```
[Out] integral((A^2*b^2*g^2*x^2 + 2*A^2*a*b*g^2*x + A^2*a^2*g^2 + (B^2*b^2*g^2*x^
2 + 2*B^2*a*b*g^2*x + B^2*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^n)^2 + 2*(A*
B*b^2*g^2*x^2 + 2*A*B*a*b*g^2*x + A*B*a^2*g^2)*log(e*((b*x + a)/(d*x + c))^
n))/(d^3*i^3*x^3 + 3*c*d^2*i^3*x^2 + 3*c^2*d*i^3*x + c^3*i^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^2 \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2}{\left(dix + ci\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)
```

```
[Out] int((b*g*x+a*g)^2*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^2*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x,
 algorithm="maxima")
```

```
[Out] A*B*a*b*g^2*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)
*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) + 2
*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3)
 - 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*
i^3)) + 1/2*A*B*a^2*g^2*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x
^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log
(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((
b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) + 1/2*A^2*b^2*g^2*((4*c*d*x + 3*c^
2)/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) + 2*log(d*x + c)/(d^3*i^3))
- 2*(2*d*x + c)*A*B*a*b*g^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^4*i^3
*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - (2*d*x + c)*A^2*a*b*g^2/(d^4*i^3*x^2
+ 2*c*d^3*i^3*x + c^2*d^2*i^3) - A*B*a^2*g^2*log(e*(b*x/(d*x + c) + a/(d*x
+ c))^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A^2*a^2*g^2/(d^3*i
^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) + 1/2*(4*(b^2*c*d*g^2 - a*b*d^2*g^2)*B^
2*x + (3*b^2*c^2*g^2 - 2*a*b*c*d*g^2 - a^2*d^2*g^2)*B^2 + 2*(B^2*b^2*d^2*g^
2*x^2 + 2*B^2*b^2*c*d*g^2*x + B^2*b^2*c^2*g^2)*log(d*x + c))*log((d*x + c)^
n)^2/(d^5*i^3*x^2 + 2*c*d^4*i^3*x + c^2*d^3*i^3) - integrate(-(2*B^2*a*b*d^
2*g^2*x*log(e)^2 + B^2*a^2*d^2*g^2*log(e)^2 + (B^2*b^2*d^2*g^2*log(e)^2 + 2
*A*B*b^2*d^2*g^2*log(e))*x^2 + (B^2*b^2*d^2*g^2*x^2 + 2*B^2*a*b*d^2*g^2*x +
 B^2*a^2*d^2*g^2)*log((b*x + a)^n)^2 + 2*(2*B^2*a*b*d^2*g^2*x*log(e) + B^2*
a^2*d^2*g^2*log(e) + (B^2*b^2*d^2*g^2*log(e) + A*B*b^2*d^2*g^2)*x^2)*log((b
*x + a)^n) - (4*(b^2*c*d*g^2*n - (g^2*n - g^2*log(e))*a*b*d^2)*B^2*x + (3*b
^2*c^2*g^2*n - 2*a*b*c*d*g^2*n - (g^2*n - 2*g^2*log(e))*a^2*d^2)*B^2 + 2*(B
^2*b^2*d^2*g^2*log(e) + A*B*b^2*d^2*g^2)*x^2 + 2*(B^2*b^2*d^2*g^2*n*x^2 + 2
*B^2*b^2*c*d*g^2*n*x + B^2*b^2*c^2*g^2*n)*log(d*x + c) + 2*(B^2*b^2*d^2*g^2
*x^2 + 2*B^2*a*b*d^2*g^2*x + B^2*a^2*d^2*g^2)*log((b*x + a)^n))*log((d*x +
c)^n))/(d^5*i^3*x^3 + 3*c*d^4*i^3*x^2 + 3*c^2*d^3*i^3*x + c^3*d^2*i^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^2\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^2}{{\left(c\,i+d\,i\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^3,x)
```

```
[Out] int(((a*g + b*g*x)^2*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**2*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**3
,x)
```

```
[Out] Timed out
```

3.204 $\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ci+dix)^3}\,dx$

Optimal. Leaf size=151

$$\frac{g(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2i^3(c+dx)^2(bc-ad)}-\frac{Bgn(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2i^3(c+dx)^2(bc-ad)}+\frac{B^2gn^2(a+bx)^2}{4i^3(c+dx)^2(bc-ad)}$$

```
[Out] 1/4*B^2*g*n^2*(b*x+a)^2/(-a*d+b*c)/i^3/(d*x+c)^2-1/2*B*g*n*(b*x+a)^2*(A+B*l
n(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/i^3/(d*x+c)^2+1/2*g*(b*x+a)^2*(A+B*ln(
e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/i^3/(d*x+c)^2
```

Rubi [C] time = 2.00, antiderivative size = 686, normalized size of antiderivative = 4.54, number of steps used = 54, number of rules used = 11, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.256, Rules used = {2528, 2525, 12, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{b^2B^2gn^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{d^2i^3(bc-ad)}+\frac{b^2B^2gn^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{d^2i^3(bc-ad)}+\frac{b^2Bgn\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{d^2i^3(bc-ad)}-\frac{b^2 \cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d*i*x)^
3,x]
```

```
[Out] (B^2*(b*c - a*d)*g*n^2)/(4*d^2*i^3*(c + d*x)^2) - (b*B^2*g*n^2)/(2*d^2*i^3*
(c + d*x)) - (b^2*B^2*g*n^2*Log[a + b*x])/(2*d^2*(b*c - a*d)*i^3) - (b^2*B^
2*g*n^2*Log[a + b*x]^2)/(2*d^2*(b*c - a*d)*i^3) - (B*(b*c - a*d)*g*n*(A + B
*Log[e*((a + b*x)/(c + d*x))^n]))/(2*d^2*i^3*(c + d*x)^2) + (b*B*g*n*(A + B
*Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*i^3*(c + d*x)) + (b^2*B*g*n*Log[a +
b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(d^2*(b*c - a*d)*i^3) + ((b*c
- a*d)*g*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*d^2*i^3*(c + d*x)^2)
- (b*g*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(d^2*i^3*(c + d*x)) + (b^2
*B^2*g*n^2*Log[c + d*x])/(2*d^2*(b*c - a*d)*i^3) + (b^2*B^2*g*n^2*Log[-((d*
(a + b*x))/(b*c - a*d))]*Log[c + d*x])/(d^2*(b*c - a*d)*i^3) - (b^2*B*g*n*(
A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(d^2*(b*c - a*d)*i^3) -
 (b^2*B^2*g*n^2*Log[c + d*x]^2)/(2*d^2*(b*c - a*d)*i^3) + (b^2*B^2*g*n^2*Lo
g[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/(d^2*(b*c - a*d)*i^3) + (b^2*B^2
*g*n^2*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(d^2*(b*c - a*d)*i^3) + (b
^2*B^2*g*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/(d^2*(b*c - a*d)*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(ag+bgx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(204c+204dx)^3}\,dx = \int \left(\frac{(-bc+ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8489664d(c+dx)^3} + \frac{bg\left(A+B\log\left(e\left(\frac{a+}{c+}\right.\right.\right.}{8489664d(c+d}\right.$$

$$= \frac{(bg)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(c+dx)^2}dx}{8489664d} - \frac{((bc-ad)g)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(c+dx)^3}d}{8489664d}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{16979328d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{8489664d^2(c+dx)}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{16979328d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{8489664d^2(c+dx)}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{16979328d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{8489664d^2(c+dx)}$$

$$= \frac{(bc-ad)g\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{16979328d^2(c+dx)^2} - \frac{bg\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right.\right.}{8489664d^2(c+dx)}$$

$$= -\frac{B(bc-ad)gn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{16979328d^2(c+dx)^2} + \frac{bBgn\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{8489664d^2(c+d}$$

$$= -\frac{B(bc-ad)gn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{16979328d^2(c+dx)^2} + \frac{bBgn\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{8489664d^2(c+d}$$

$$= -\frac{B(bc-ad)gn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{16979328d^2(c+dx)^2} + \frac{bBgn\left(A+B\log\left(e\left(\frac{a}{c}\right.\right.\right.}{8489664d^2(c+d}$$

$$= \frac{B^2(bc-ad)gn^2}{33958656d^2(c+dx)^2} - \frac{bB^2gn^2}{16979328d^2(c+dx)} - \frac{b^2B^2gn^2\log(a+}{16979328d^2(bc-}$$

$$= \frac{B^2(bc-ad)gn^2}{33958656d^2(c+dx)^2} - \frac{bB^2gn^2}{16979328d^2(c+dx)} - \frac{b^2B^2gn^2\log(a+}{16979328d^2(bc-}$$

$$= \frac{B^2(bc-ad)gn^2}{33958656d^2(c+dx)^2} - \frac{bB^2gn^2}{16979328d^2(c+dx)} - \frac{b^2B^2gn^2\log(a+}{16979328d^2(bc-}$$

Mathematica [C] time = 0.99, size = 803, normalized size = 5.32

$$g\left(2(bc-ad)^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 - 4b(bc-ad)(c+dx)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 + 4bBn(c+dx)\left(2(bc-\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a*g + b*g*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(c*i + d
*i*x)^3,x]
```

```
[Out] (g*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 - 4*b*(b*c - a
*d)*(c + d*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2 + 4*b*B*n*(c + d*x)*
(2*(b*c - a*d)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 2*b*(c + d*x)*Log[a
 + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 2*b*(c + d*x)*(A + B*Log[e
*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 2*B*n*(b*c - a*d + b*(c + d*x)*Lo
g[a + b*x] - b*(c + d*x)*Log[c + d*x]) - b*B*n*(c + d*x)*(Log[a + b*x]*(Log
[a + b*x] - 2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/
(-(b*c) + a*d)]) + b*B*n*(c + d*x)*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] -
Log[c + d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])) - B*
n*(2*(b*c - a*d)^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*b*(b*c - a*d)
*(c + d*x)*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) + 4*b^2*(c + d*x)^2*Log[a
 + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]) - 4*b^2*(c + d*x)^2*(A + B*L
og[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x] - 4*b*B*n*(c + d*x)*(b*c - a*d
+ b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x]) - B*n*((b*c - a*d)^2
 + 2*b*(b*c - a*d)*(c + d*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c +
d*x)^2*Log[c + d*x]) - 2*b^2*B*n*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] -
2*Log[(b*(c + d*x))/(b*c - a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*
d)]) + 2*b^2*B*n*(c + d*x)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c
+ d*x])*Log[c + d*x] + 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)]))))/(4*d^2*(
b*c - a*d)*i^3*(c + d*x)^2)
```

fricas [B] time = 0.87, size = 600, normalized size = 3.97

$$-\frac{\left(B^2b^2c^2 - B^2a^2d^2\right)gn^2 - 2\left(ABb^2c^2 - ABa^2d^2\right)gn + 2\left(2\left(B^2b^2cd - B^2abd^2\right)gx + \left(B^2b^2c^2 - B^2a^2d^2\right)g\right)\log(e)^2 - \cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, a
lgorithm="fricas")
```

```
[Out] -1/4*((B^2*b^2*c^2 - B^2*a^2*d^2)*g*n^2 - 2*(A*B*b^2*c^2 - A*B*a^2*d^2)*g*n
 + 2*(2*(B^2*b^2*c*d - B^2*a*b*d^2)*g*x + (B^2*b^2*c^2 - B^2*a^2*d^2)*g)*lo
g(e)^2 - 2*(B^2*b^2*d^2*g*n^2*x^2 + 2*B^2*a*b*d^2*g*n^2*x + B^2*a^2*d^2*g*n
^2)*log((b*x + a)/(d*x + c))^2 + 2*(A^2*b^2*c^2 - A^2*a^2*d^2)*g + 2*((B^2*
b^2*c*d - B^2*a*b*d^2)*g*n^2 - 2*(A*B*b^2*c*d - A*B*a*b*d^2)*g*n + 2*(A^2*b
^2*c*d - A^2*a*b*d^2)*g)*x - 2*((B^2*b^2*c^2 - B^2*a^2*d^2)*g*n - 2*(A*B*b^
2*c^2 - A*B*a^2*d^2)*g + 2*((B^2*b^2*c*d - B^2*a*b*d^2)*g*n - 2*(A*B*b^2*c*
d - A*B*a*b*d^2)*g)*x + 2*(B^2*b^2*d^2*g*n*x^2 + 2*B^2*a*b*d^2*g*n*x + B^2*
a^2*d^2*g*n)*log((b*x + a)/(d*x + c)))*log(e) + 2*(B^2*a^2*d^2*g*n^2 - 2*A*
B*a^2*d^2*g*n + (B^2*b^2*d^2*g*n^2 - 2*A*B*b^2*d^2*g*n)*x^2 + 2*(B^2*a*b*d^
2*g*n^2 - 2*A*B*a*b*d^2*g*n)*x)*log((b*x + a)/(d*x + c)))/((b*c*d^4 - a*d^5
)*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3)
```

giac [A] time = 19.66, size = 186, normalized size = 1.23

$$\frac{1}{4}\left(\frac{2\,(bx+a)^2B^2gin^2\log\left(\frac{bx+a}{dx+c}\right)^2}{(dx+c)^2} - \frac{2\left(B^2gin^2 - 2\,ABgin - 2\,B^2gin\right)(bx+a)^2\log\left(\frac{bx+a}{dx+c}\right)}{(dx+c)^2} + \frac{\left(B^2gin^2 - 2\,ABgin - \cdots\right.}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, a
lgorithm="giac")
```

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

```
))/(d*x + c)^2 + (B^2*g*i*n^2 - 2*A*B*g*i*n - 2*B^2*g*i*n + 2*A^2*g*i + 4*A
*B*g*i + 2*B^2*g*i)*(b*x + a)^2/(d*x + c)^2)*(b*c/(b*c - a*d)^2 - a*d/(b*c
- a*d)^2)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(dix+ci\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)
```

```
[Out] int((b*g*x+a*g)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)
```

maxima [B] time = 2.35, size = 1995, normalized size = 13.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, a
lgorithm="maxima")
```

```
[Out] 1/2*A*B*b*g*n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)
*i^3*x^2 + 2*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) + 2
*(b^2*c - 2*a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3)
 - 2*(b^2*c - 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*
i^3)) + 1/2*A*B*a*g*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 +
 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log(b*x
 + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*
c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3)) - 1/2*(2*d*x + c)*B^2*b*g*log(e*(b*x/(
d*x + c) + a/(d*x + c))^n)^2/(d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) +
1/4*(2*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^2
 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log(b*x + a)/((b^2*c
^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*b
*c*d^2 + a^2*d^3)*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - (7*b^2*c^2
 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x +
a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d
- a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*
b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*
c^2)*log(b*x + a))*log(d*x + c))*n^2/(b^2*c^4*d*i^3 - 2*a*b*c^3*d^2*i^3 + a
^2*c^2*d^3*i^3 + (b^2*c^2*d^3*i^3 - 2*a*b*c*d^4*i^3 + a^2*d^5*i^3)*x^2 + 2*
(b^2*c^3*d^2*i^3 - 2*a*b*c^2*d^3*i^3 + a^2*c*d^4*i^3)*x))*B^2*a*g + 1/4*(2*
n*((b*c^2 - 3*a*c*d + 2*(b*c*d - 2*a*d^2)*x)/((b*c*d^4 - a*d^5)*i^3*x^2 + 2
*(b*c^2*d^3 - a*c*d^4)*i^3*x + (b*c^3*d^2 - a*c^2*d^3)*i^3) + 2*(b^2*c - 2*
a*b*d)*log(b*x + a)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3) - 2*(b^2*c
- 2*a*b*d)*log(d*x + c)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*i^3))*log(e*
(b*x/(d*x + c) + a/(d*x + c))^n) - (b^2*c^3 - 8*a*b*c^2*d + 7*a^2*c*d^2 + 2
*(b^2*c^3 - 2*a*b*c^2*d + (b^2*c*d^2 - 2*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 2*a*
b*c*d^2)*x)*log(b*x + a)^2 + 2*(b^2*c^3 - 2*a*b*c^2*d + (b^2*c*d^2 - 2*a*b*
d^3)*x^2 + 2*(b^2*c^2*d - 2*a*b*c*d^2)*x)*log(d*x + c)^2 + 2*(b^2*c^2*d - 5
*a*b*c*d^2 + 4*a^2*d^3)*x + 2*(b^2*c^3 - 4*a*b*c^2*d + (b^2*c*d^2 - 4*a*b*d
^3)*x^2 + 2*(b^2*c^2*d - 4*a*b*c*d^2)*x)*log(b*x + a) - 2*(b^2*c^3 - 4*a*b*
c^2*d + (b^2*c*d^2 - 4*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 4*a*b*c*d^2)*x + 2*(b^
2*c^3 - 2*a*b*c^2*d + (b^2*c*d^2 - 2*a*b*d^3)*x^2 + 2*(b^2*c^2*d - 2*a*b*c*
d^2)*x)*log(b*x + a))*log(d*x + c))*n^2/(b^2*c^4*d^2*i^3 - 2*a*b*c^3*d^3*i^
3 + a^2*c^2*d^4*i^3 + (b^2*c^2*d^4*i^3 - 2*a*b*c*d^5*i^3 + a^2*d^6*i^3)*x^2
 + 2*(b^2*c^3*d^3*i^3 - 2*a*b*c^2*d^4*i^3 + a^2*c*d^5*i^3)*x))*B^2*b*g - (2
*d*x + c)*A*B*b*g*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(d^4*i^3*x^2 + 2*c
```

```
*d^3*i^3*x + c^2*d^2*i^3) - 1/2*B^2*a*g*log(e*(b*x/(d*x + c) + a/(d*x + c))
^n)^2/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*(2*d*x + c)*A^2*b*g/(
d^4*i^3*x^2 + 2*c*d^3*i^3*x + c^2*d^2*i^3) - A*B*a*g*log(e*(b*x/(d*x + c) +
 a/(d*x + c))^n)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A^2*a*g/(d
^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3)
```

mupad [B] time = 7.50, size = 565, normalized size = 3.74

$$-\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2\left(\frac{\frac{B^2\,a\,g}{2\,d}+\frac{B^2\,b\,g\,x}{d}+\frac{B^2\,b\,c\,g}{2\,d^2}}{c^2\,i^3+2\,c\,d\,i^3\,x+d^2\,i^3\,x^2}+\frac{B^2\,b^2\,g}{2\,d^2\,i^3\,(a\,d-b\,c)}\right)-\frac{x\,\left(2\,b\,d\,g\,A^2-2\,b\,d\,g\,A\,B\,n+b\,d\,g\,B^2\,n^2\right)+}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x)^
3,x)
```

```
[Out] - log(e*((a + b*x)/(c + d*x))^n)^2*(((B^2*a*g)/(2*d) + (B^2*b*g*x)/d + (B^2
*b*c*g)/(2*d^2))/(c^2*i^3 + d^2*i^3*x^2 + 2*c*d*i^3*x) + (B^2*b^2*g)/(2*d^2
*i^3*(a*d - b*c))) - (x*(2*A^2*b*d*g + B^2*b*d*g*n^2 - 2*A*B*b*d*g*n) + A^2
*a*d*g + A^2*b*c*g + (B^2*a*d*g*n^2)/2 + (B^2*b*c*g*n^2)/2 - A*B*a*d*g*n -
A*B*b*c*g*n)/(2*c^2*d^2*i^3 + 2*d^4*i^3*x^2 + 4*c*d^3*i^3*x) - log(e*((a +
b*x)/(c + d*x))^n)*((A*B*a*d*g + A*B*b*c*g - B^2*a*d*g*n + B^2*b*c*g*n + 2*
A*B*b*d*g*x)/(c^2*d^2*i^3 + d^4*i^3*x^2 + 2*c*d^3*i^3*x) - (B^2*b^2*g*((c*d
^2*i^3*n*(a*d - b*c))/(2*b) + (d^3*i^3*n*x*(a*d - b*c))/b - (d^2*i^3*n*(a*d
 - b*c)*(a*d - 2*b*c))/(2*b^2)))/(d^2*i^3*(a*d - b*c)*(c^2*d^2*i^3 + d^4*i^
3*x^2 + 2*c*d^3*i^3*x))) - (B*b^2*g*n*atan((B*b^2*g*n*(2*A - B*n)*((a*d^3*i
^3 + b*c*d^2*i^3)/(d^2*i^3) + 2*b*d*x)*1i)/((a*d - b*c)*(B^2*b^2*g*n^2 - 2*
A*B*b^2*g*n)))*(2*A - B*n)*1i)/(d^2*i^3*(a*d - b*c))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{g\left(\int\frac{A^2a}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx+\int\frac{A^2bx}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx+\int\frac{B^2a\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx+\int\frac{2ABa\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx+\right.}{i^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)*(A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**3,x)
```

```
[Out] g*(Integral(A**2*a/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + In
tegral(A**2*b*x/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integ
ral(B**2*a*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(c**3 + 3*c**2*d*x +
3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*A*B*a*log(e*(a/(c + d*x) + b*x/
(c + d*x))**n)/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integr
al(B**2*b*x*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(c**3 + 3*c**2*d*x +
 3*c*d**2*x**2 + d**3*x**3), x) + Integral(2*A*B*b*x*log(e*(a/(c + d*x) + b
*x/(c + d*x))**n)/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x))/i**3
```

3.205 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ci+dix)^3}\,dx$

Optimal. Leaf size=317

$$\frac{Bdn(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2i^3(c+dx)^2(bc-ad)^2}+\frac{b(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{i^3(c+dx)(bc-ad)^2}-\frac{d(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right.}{2i^3(c+dx)^2(bc-ad)^2}$$

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

Rubi [C] time = 0.88, antiderivative size = 626, normalized size of antiderivative = 1.97, number of steps used = 28, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {2525, 12, 2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 44}

$$\frac{b^2B^2n^2\text{PolyLog}\left(2,-\frac{d(a+bx)}{bc-ad}\right)}{di^3(bc-ad)^2}+\frac{b^2B^2n^2\text{PolyLog}\left(2,\frac{b(c+dx)}{bc-ad}\right)}{di^3(bc-ad)^2}+\frac{b^2Bn\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{di^3(bc-ad)^2}-\frac{b^2Bn}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x)^3,x]
```

```
[Out] -(B^2*n^2)/(4*d*i^3*(c + d*x)^2) - (3*b*B^2*n^2)/(2*d*(b*c - a*d)*i^3*(c +
d*x)) - (3*b^2*B^2*n^2*Log[a + b*x])/(2*d*(b*c - a*d)^2*i^3) - (b^2*B^2*n^2
*Log[a + b*x]^2)/(2*d*(b*c - a*d)^2*i^3) + (B*n*(A + B*Log[e*((a + b*x)/(c
+ d*x))^n]))/(2*d*i^3*(c + d*x)^2) + (b*B*n*(A + B*Log[e*((a + b*x)/(c + d*
x))^n]))/(d*(b*c - a*d)*i^3*(c + d*x)) + (b^2*B*n*Log[a + b*x]*(A + B*Log[e
*((a + b*x)/(c + d*x))^n]))/(d*(b*c - a*d)^2*i^3) - (A + B*Log[e*((a + b*x)
/(c + d*x))^n])^2/(2*d*i^3*(c + d*x)^2) + (3*b^2*B^2*n^2*Log[c + d*x])/(2*d
*(b*c - a*d)^2*i^3) + (b^2*B^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c
+ d*x])/(d*(b*c - a*d)^2*i^3) - (b^2*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))
^n])*Log[c + d*x])/(d*(b*c - a*d)^2*i^3) - (b^2*B^2*n^2*Log[c + d*x]^2)/(2*
d*(b*c - a*d)^2*i^3) + (b^2*B^2*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a
*d)])/(d*(b*c - a*d)^2*i^3) + (b^2*B^2*n^2*PolyLog[2, -((d*(a + b*x))/(b*c
- a*d))])/(d*(b*c - a*d)^2*i^3) + (b^2*B^2*n^2*PolyLog[2, (b*(c + d*x))/(b*
c - a*d)])/(d*(b*c - a*d)^2*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(205c+205dx)^3}\,dx = -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17230250d(c+dx)^2} + \frac{(Bn)\int \frac{(bc-ad)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{42025(a+bx)(c+dx)^3}\,dx}{205d}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17230250d(c+dx)^2} + \frac{(B(bc-ad)n)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)(c+dx)^3}\,dx}{8615125d}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17230250d(c+dx)^2} + \frac{(B(bc-ad)n)\int \left(\frac{b^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(bc-ad)^3(a+bx)} - \frac{d\left(A+B\log\right.}{(bc-a}\right.}{}$$

$$= -\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17230250d(c+dx)^2} - \frac{(Bn)\int \frac{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(c+dx)^3}\,dx}{8615125} - \frac{\left(b^2Bn\right)\int \frac{A+B\log\left(\right.}{c+}}{8615125(bc}$$

$$= \frac{Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17230250d(c+dx)^2} + \frac{bBn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8615125d(bc-ad)(c+dx)} + \frac{b^2Bn\log(a+}{86}$$

$$= \frac{Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17230250d(c+dx)^2} + \frac{bBn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8615125d(bc-ad)(c+dx)} + \frac{b^2Bn\log(a+}{86}$$

$$= \frac{Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17230250d(c+dx)^2} + \frac{bBn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8615125d(bc-ad)(c+dx)} + \frac{b^2Bn\log(a+}{86}$$

$$= -\frac{B^2n^2}{34460500d(c+dx)^2} - \frac{3bB^2n^2}{17230250d(bc-ad)(c+dx)} - \frac{3b^2B^2n^2\log(a+bx}{17230250d(bc-ad}$$

$$= -\frac{B^2n^2}{34460500d(c+dx)^2} - \frac{3bB^2n^2}{17230250d(bc-ad)(c+dx)} - \frac{3b^2B^2n^2\log(a+bx}{17230250d(bc-ad}$$

$$= -\frac{B^2n^2}{34460500d(c+dx)^2} - \frac{3bB^2n^2}{17230250d(bc-ad)(c+dx)} - \frac{3b^2B^2n^2\log(a+bx}{17230250d(bc-ad}$$

Mathematica [C] time = 0.44, size = 464, normalized size = 1.46

$$\frac{Bn\left(4b^2(c+dx)^2\log(a+bx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)-4b^2(c+dx)^2\log(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+2(bc-ad)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)+4b(c+dx)(bc-ad)\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(c*i + d*i*x)^3,x]
```

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

```
] - b*(c + d*x)*Log[c + d*x]) - B*n*((b*c - a*d)^2 + 2*b*(b*c - a*d)*(c + d
*x) + 2*b^2*(c + d*x)^2*Log[a + b*x] - 2*b^2*(c + d*x)^2*Log[c + d*x]) - 2*
b^2*B*n*(c + d*x)^2*(Log[a + b*x]*(Log[a + b*x] - 2*Log[(b*(c + d*x))/(b*c
- a*d)]) - 2*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)]) + 2*b^2*B*n*(c + d*x
)^2*((2*Log[(d*(a + b*x))/(-(b*c) + a*d)] - Log[c + d*x])*Log[c + d*x] + 2*
PolyLog[2, (b*(c + d*x))/(b*c - a*d)])))/(b*c - a*d)^2)/(4*d*i^3*(c + d*x)^
2)
```

fricas [B] time = 0.99, size = 654, normalized size = 2.06

$$-\frac{2\,A^2b^2c^2-4\,A^2abcd+2\,A^2a^2d^2+\left(7\,B^2b^2c^2-8\,B^2abcd+B^2a^2d^2\right)n^2+2\left(B^2b^2c^2-2\,B^2abcd+B^2a^2d^2\right)\log(e)^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, algorithm="fr
icas")
```

```
[Out] -1/4*(2*A^2*b^2*c^2 - 4*A^2*a*b*c*d + 2*A^2*a^2*d^2 + (7*B^2*b^2*c^2 - 8*B^
2*a*b*c*d + B^2*a^2*d^2)*n^2 + 2*(B^2*b^2*c^2 - 2*B^2*a*b*c*d + B^2*a^2*d^2
)*log(e)^2 - 2*(B^2*b^2*d^2*n^2*x^2 + 2*B^2*b^2*c*d*n^2*x + (2*B^2*a*b*c*d
- B^2*a^2*d^2)*n^2)*log((b*x + a)/(d*x + c))^2 - 2*(3*A*B*b^2*c^2 - 4*A*B*a
*b*c*d + A*B*a^2*d^2)*n + 2*(3*(B^2*b^2*c*d - B^2*a*b*d^2)*n^2 - 2*(A*B*b^2
*c*d - A*B*a*b*d^2)*n)*x + 2*(2*A*B*b^2*c^2 - 4*A*B*a*b*c*d + 2*A*B*a^2*d^2
 - 2*(B^2*b^2*c*d - B^2*a*b*d^2)*n*x - (3*B^2*b^2*c^2 - 4*B^2*a*b*c*d + B^2
*a^2*d^2)*n - 2*(B^2*b^2*d^2*n*x^2 + 2*B^2*b^2*c*d*n*x + (2*B^2*a*b*c*d - B
^2*a^2*d^2)*n)*log((b*x + a)/(d*x + c)))*log(e) + 2*((4*B^2*a*b*c*d - B^2*a
^2*d^2)*n^2 + (3*B^2*b^2*d^2*n^2 - 2*A*B*b^2*d^2*n)*x^2 - 2*(2*A*B*a*b*c*d
- A*B*a^2*d^2)*n - 2*(2*A*B*b^2*c*d*n - (2*B^2*b^2*c*d + B^2*a*b*d^2)*n^2)*
x)*log((b*x + a)/(d*x + c)))/((b^2*c^2*d^3 - 2*a*b*c*d^4 + a^2*d^5)*i^3*x^2
 + 2*(b^2*c^3*d^2 - 2*a*b*c^2*d^3 + a^2*c*d^4)*i^3*x + (b^2*c^4*d - 2*a*b*c
^3*d^2 + a^2*c^2*d^3)*i^3)
```

giac [A] time = 4.17, size = 371, normalized size = 1.17

$$\frac{1}{4}\left(2\left(\frac{2\,(bx+a)B^2bin^2}{(bc-ad)(dx+c)}-\frac{(bx+a)^2B^2din^2}{(bc-ad)(dx+c)^2}\right)\log\left(\frac{bx+a}{dx+c}\right)^2+2\left(\frac{\left(B^2din^2-2\,ABdin-2\,B^2din\right)(bx+a)^2}{(bc-ad)(dx+c)^2}-\frac{4\left(B^2\right.}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, algorithm="gi
ac")
```

```
[Out] 1/4*(2*(2*(b*x + a)*B^2*b*i*n^2/((b*c - a*d)*(d*x + c)) - (b*x + a)^2*B^2*d
*i*n^2/((b*c - a*d)*(d*x + c)^2))*log((b*x + a)/(d*x + c))^2 + 2*((B^2*d*i*
n^2 - 2*A*B*d*i*n - 2*B^2*d*i*n)*(b*x + a)^2/((b*c - a*d)*(d*x + c)^2) - 4*
(B^2*b*i*n^2 - A*B*b*i*n - B^2*b*i*n)*(b*x + a)/((b*c - a*d)*(d*x + c)))*lo
g((b*x + a)/(d*x + c)) - (B^2*d*i*n^2 - 2*A*B*d*i*n - 2*B^2*d*i*n + 2*A^2*d
*i + 4*A*B*d*i + 2*B^2*d*i)*(b*x + a)^2/((b*c - a*d)*(d*x + c)^2) + 4*(2*B^
2*b*i*n^2 - 2*A*B*b*i*n - 2*B^2*b*i*n + A^2*b*i + 2*A*B*b*i + B^2*b*i)*(b*x
 + a)/((b*c - a*d)*(d*x + c)))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{(dix+ci)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(d*i*x+c*i)^3,x)
```

maxima [B] time = 1.56, size = 861, normalized size = 2.72

$$\frac{1}{2}ABn\left(\frac{2bdx+3bc-ad}{\left(bcd^3-ad^4\right)i^3x^2+2\left(bc^2d^2-acd^3\right)i^3x+\left(bc^3d-ac^2d^2\right)i^3}+\frac{2b^2\log(bx+a)}{\left(b^2c^2d-2abcd^2+a^2d^3\right)i^3}-\frac{2b^2\log\cdots}{\left(b^2c^2d-2a\cdots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(d*i*x+c*i)^3,x, algorithm="ma
xima")
```

```
[Out] 1/2*A*B*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*d^4)*i^3*x^2 + 2*(b*c^2*d^
2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) + 2*b^2*log(b*x + a)/((b^2*
c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d*x + c)/((b^2*c^2*d - 2*a*
b*c*d^2 + a^2*d^3)*i^3)) + 1/4*(2*n*((2*b*d*x + 3*b*c - a*d)/((b*c*d^3 - a*
d^4)*i^3*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*i^3*x + (b*c^3*d - a*c^2*d^2)*i^3) +
 2*b^2*log(b*x + a)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3) - 2*b^2*log(d
*x + c)/((b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*i^3))*log(e*(b*x/(d*x + c) + a
/(d*x + c))^n) - (7*b^2*c^2 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*
c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*l
og(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^
2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d
^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))*n^2/(b^2*c^4*d*
i^3 - 2*a*b*c^3*d^2*i^3 + a^2*c^2*d^3*i^3 + (b^2*c^2*d^3*i^3 - 2*a*b*c*d^4*
i^3 + a^2*d^5*i^3)*x^2 + 2*(b^2*c^3*d^2*i^3 - 2*a*b*c^2*d^3*i^3 + a^2*c*d^4
*i^3)*x))*B^2 - 1/2*B^2*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2/(d^3*i^3*x
^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - A*B*log(e*(b*x/(d*x + c) + a/(d*x + c))^n
)/(d^3*i^3*x^2 + 2*c*d^2*i^3*x + c^2*d*i^3) - 1/2*A^2/(d^3*i^3*x^2 + 2*c*d^
2*i^3*x + c^2*d*i^3)
```

mupad [B] time = 6.67, size = 505, normalized size = 1.59

$$-\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2\left(\frac{B^2}{2\,d\,\left(c^2\,i^3+2\,c\,d\,i^3\,x+d^2\,i^3\,x^2\right)}-\frac{B^2\,b^2}{2\,d\,i^3\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}\right)-\frac{\frac{2\,A^2\,a\,d-2\,A^2\,b\,c+B^2\,a\,d\,n^2-\cdots}{2(\cdots}}{2\,c\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/(c*i + d*i*x)^3,x)
```

```
[Out] - log(e*((a + b*x)/(c + d*x))^n)^2*(B^2/(2*d*(c^2*i^3 + d^2*i^3*x^2 + 2*c*d
*i^3*x)) - (B^2*b^2)/(2*d*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d))) - ((2*A^2*a
*d - 2*A^2*b*c + B^2*a*d*n^2 - 7*B^2*b*c*n^2 - 2*A*B*a*d*n + 6*A*B*b*c*n)/(
2*(a*d - b*c)) - (b*x*(3*B^2*d*n^2 - 2*A*B*d*n))/(a*d - b*c))/(2*c^2*d*i^3
+ 2*d^3*i^3*x^2 + 4*c*d^2*i^3*x) - log(e*((a + b*x)/(c + d*x))^n)*((A*B)/(c
^2*d*i^3 + d^3*i^3*x^2 + 2*c*d^2*i^3*x) + (B^2*b^2*((d^2*i^3*n*x*(a*d - b*c
))/b - (d*i^3*n*(a*d - b*c)*(a*d - 2*b*c))/(2*b^2) + (c*d*i^3*n*(a*d - b*c)
)/(2*b)))/(d*i^3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(c^2*d*i^3 + d^3*i^3*x^2 +
 2*c*d^2*i^3*x))) - (B*b^2*n*atan(((2*b*d*x + (2*a^2*d^3*i^3 - 2*b^2*c^2*d*
i^3)/(2*d*i^3*(a*d - b*c)))*1i)/(a*d - b*c))*(2*A - 3*B*n)*1i)/(d*i^3*(a*d
- b*c)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{A^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx+\int \frac{B^2\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)^2}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx+\int \frac{2AB\log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)}{c^3+3c^2dx+3cd^2x^2+d^3x^3}\,dx}{i^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(d*i*x+c*i)**3,x)
```

```
[Out] (Integral(A**2/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x) + Integr
al(B**2*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)**2/(c**3 + 3*c**2*d*x + 3*c
*d**2*x**2 + d**3*x**3), x) + Integral(2*A*B*log(e*(a/(c + d*x) + b*x/(c +
d*x))**n)/(c**3 + 3*c**2*d*x + 3*c*d**2*x**2 + d**3*x**3), x))/i**3
```

3.206 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)(ci+dix)^3}\,dx$

Optimal. Leaf size=402

$$\frac{b^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^3}{3Bgi^3n(bc-ad)^3}+\frac{d^2(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2gi^3(c+dx)^2(bc-ad)^3}-\frac{Bd^2n(a+bx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2gi^3(c+dx)^2(bc-ad)^3}-\cdots$$

```
[Out] 1/4*B^2*d^2*n^2*(b*x+a)^2/(-a*d+b*c)^3/g/i^3/(d*x+c)^2+4*A*b*B*d*n*(b*x+a)/
(-a*d+b*c)^3/g/i^3/(d*x+c)-4*b*B^2*d*n^2*(b*x+a)/(-a*d+b*c)^3/g/i^3/(d*x+c)
+4*b*B^2*d*n*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^3/g/i^3/(d*x+c)-1
/2*B*d^2*n*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^3/g/i^3/(d*
x+c)^2+1/2*d^2*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g/i
^3/(d*x+c)^2-2*b*d*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^3/g
/i^3/(d*x+c)+1/3*b^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^3/g/i^3
/n
```

Rubi [C] time = 7.04, antiderivative size = 2025, normalized size of antiderivative = 5.04, number of steps used = 111, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.689, Rules used = {2528, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 12, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2525, 44, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*i*x)^3
),x]
```

```
[Out] (B^2*n^2)/(4*(b*c - a*d)*g*i^3*(c + d*x)^2) + (7*b*B^2*n^2)/(2*(b*c - a*d)^
2*g*i^3*(c + d*x)) + (7*b^2*B^2*n^2*Log[a + b*x])/(2*(b*c - a*d)^3*g*i^3) -
 (A*b^2*B*n*Log[a + b*x]^2)/((b*c - a*d)^3*g*i^3) + (3*b^2*B^2*n^2*Log[a +
b*x]^2)/(2*(b*c - a*d)^3*g*i^3) - (b^2*B^2*Log[-((b*c - a*d)/(d*(a + b*x)))
]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^3*g*i^3) - (b^2*B^2*Log[a
+ b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^3*g*i^3) - (B*n*(A +
B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)*g*i^3*(c + d*x)^2) - (3*b
*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^2*g*i^3*(c + d*x)
) - (3*b^2*B*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c -
 a*d)^3*g*i^3) + (A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/(2*(b*c - a*d)*g*
i^3*(c + d*x)^2) + (b*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d
)^2*g*i^3*(c + d*x)) + (b^2*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))
^n])^2)/((b*c - a*d)^3*g*i^3) - (7*b^2*B^2*n^2*Log[c + d*x])/(2*(b*c - a*d)
^3*g*i^3) + (2*A*b^2*B*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/((
b*c - a*d)^3*g*i^3) - (3*b^2*B^2*n^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[
c + d*x])/((b*c - a*d)^3*g*i^3) + (b^2*B^2*Log[(a + b*x)^n]^2*Log[c + d*x])
/((b*c - a*d)^3*g*i^3) + (3*b^2*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*
Log[c + d*x])/((b*c - a*d)^3*g*i^3) - (b^2*(A + B*Log[e*((a + b*x)/(c + d*x
))^n])^2*Log[c + d*x])/((b*c - a*d)^3*g*i^3) - (A*b^2*B*n*Log[c + d*x]^2)/(
(b*c - a*d)^3*g*i^3) + (3*b^2*B^2*n^2*Log[c + d*x]^2)/(2*(b*c - a*d)^3*g*i^
3) + (b^2*B^2*n^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^3*g*i^3) - (b^2
*B^2*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2)/((b*c - a*d)^3*g*i^3)
 - (b^2*B^2*n^2*Log[c + d*x]^3)/(3*(b*c - a*d)^3*g*i^3) + (2*A*b^2*B*n*Log[
a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) - (3*b^2*B^2
*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) - (
b^2*B^2*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g
*i^3) + (2*b^2*B^2*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)])/((b*c -
```

```
 a*d)^3*g*i^3) + (b^2*B^2*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^
3*g*i^3) - (b^2*B^2*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-n)]^2
)/((b*c - a*d)^3*g*i^3) - (2*b^2*B^2*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Lo
g[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*
x)^(-n)]))/((b*c - a*d)^3*g*i^3) + (2*A*b^2*B*n*PolyLog[2, -((d*(a + b*x))/
(b*c - a*d))])/((b*c - a*d)^3*g*i^3) - (3*b^2*B^2*n^2*PolyLog[2, -((d*(a +
b*x))/(b*c - a*d))])/((b*c - a*d)^3*g*i^3) - (2*b^2*B^2*n*Log[(a + b*x)^n]*
PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g*i^3) + (2*A*b^2*
B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) - (3*b^2*B
^2*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) + (2*b^
2*B^2*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c -
a*d)^3*g*i^3) - (2*b^2*B^2*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x)
)^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c -
a*d)^3*g*i^3) + (2*b^2*B^2*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 +
(b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*n^2*PolyLog[
3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*n^2*Po
lyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^3*g*i^3) + (2*b^2*B^2*n^2
*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^3*g*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
```

```
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
```

```
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
```

```
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(206c+206dx)^3(ag+bgx)}\,dx = \int \left(\frac{b^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8741816(bc-ad)^3g(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8741816(bc-ad)g(c+dx)^3} - \frac{bd\left(A+\right.}{8741816}\right.$$

$$= \frac{b^3\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}\,dx}{8741816(bc-ad)^3g} - \frac{\left(b^2d\right)\int\frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}\,dx}{8741816(bc-ad)^3g} - \frac{(bd)\int\frac{\left(A+B\log\right.}{}}{8741816}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17483632(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8741816(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+}{8}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17483632(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8741816(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+}{8}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17483632(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8741816(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+}{8}$$

$$= \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17483632(bc-ad)g(c+dx)^2} + \frac{b\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8741816(bc-ad)^2g(c+dx)} + \frac{b^2\log(a+}{8}$$

$$= -\frac{Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17483632(bc-ad)g(c+dx)^2} - \frac{3bBn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8741816(bc-ad)^2g(c+dx)} - \frac{3b^2Bn}{}$$

$$= -\frac{b^2B^2\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{8741816(bc-ad)^3g} - \frac{Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17483632(bc-ad)g(c+dx)^2} - \frac{3bB}{87}$$

$$= -\frac{b^2B^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{8741816(bc-ad)^3g} - \frac{b^2B^2\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{8741816(bc-ad)^3g}$$

$$= \frac{B^2n^2}{34967264(bc-ad)g(c+dx)^2} + \frac{7bB^2n^2}{17483632(bc-ad)^2g(c+dx)} + \frac{7b^2B^2n^2}{1748363}$$

$$= \frac{B^2n^2}{34967264(bc-ad)g(c+dx)^2} + \frac{7bB^2n^2}{17483632(bc-ad)^2g(c+dx)} + \frac{7b^2B^2n^2}{1748363}$$

$$= \frac{B^2n^2}{34967264(bc-ad)g(c+dx)^2} + \frac{7bB^2n^2}{17483632(bc-ad)^2g(c+dx)} + \frac{7b^2B^2n^2}{1748363}$$

$$= \frac{B^2n^2}{34967264(bc-ad)g(c+dx)^2} + \frac{7bB^2n^2}{17483632(bc-ad)^2g(c+dx)} + \frac{7b^2B^2n^2}{1748363}$$

$$= \frac{B^2n^2}{34967264(bc-ad)g(c+dx)^2} + \frac{7bB^2n^2}{17483632(bc-ad)^2g(c+dx)} + \frac{7b^2B^2n^2}{1748363}$$

Mathematica [B] time = 1.37, size = 971, normalized size = 2.42

$$4b^2B^2n^2\log^3\left(\frac{a+bx}{c+dx}\right)-\frac{6Bn\left(-2Ac^2b^2-2Ad^2x^2b^2+3Bd^2nx^2b^2-4Acdxb^2+4Bcdnxb^2-2B(c+dx)^2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)b^2+2Bn(c+dx)^2\log\left(\frac{a+bx}{c+dx}\right)b^2+4ab\right.}{(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)*(c*i + d*
i*x)^3),x]
```

```
[Out] (4*b^2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^3 - (6*B*n*Log[(a + b*x)/(c + d*x)]
^2*(-2*A*b^2*c^2 + 4*a*b*B*c*d*n - a^2*B*d^2*n - 4*A*b^2*c*d*x + 4*b^2*B*c*
d*n*x + 2*a*b*B*d^2*n*x - 2*A*b^2*d^2*x^2 + 3*b^2*B*d^2*n*x^2 - 2*b^2*B*(c
+ d*x)^2*Log[e*((a + b*x)/(c + d*x))^n] + 2*b^2*B*n*(c + d*x)^2*Log[(a + b*
x)/(c + d*x)]))/(c + d*x)^2 - (6*B*(b*c - a*d)*n*Log[(a + b*x)/(c + d*x)]*(
-6*A*b*c + 2*a*A*d + 7*b*B*c*n - a*B*d*n - 4*A*b*d*x + 6*b*B*d*n*x + 2*B*(-
3*b*c + a*d - 2*b*d*x)*Log[e*((a + b*x)/(c + d*x))^n] + 2*B*n*(3*b*c - a*d
+ 2*b*d*x)*Log[(a + b*x)/(c + d*x)]))/(c + d*x)^2 + (3*(b*c - a*d)^2*(2*A^2
 - 2*A*B*n + B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A
 + B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2
*B*Log[e*((a + b*x)/(c + d*x))^n]*(-2*A + B*n + 2*B*n*Log[(a + b*x)/(c + d*
x)])))/(c + d*x)^2 + (6*b*(b*c - a*d)*(2*A^2 - 6*A*B*n + 7*B^2*n^2 + 2*B^2*
Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + 3*B*n)*Log[(a + b*x)/(c +
d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*
x))^n]*(-2*A + 3*B*n + 2*B*n*Log[(a + b*x)/(c + d*x)])))/(c + d*x) + 6*b^2*
Log[a + b*x]*(2*A^2 - 6*A*B*n + 7*B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x
))^n]^2 + 2*B*n*(-2*A + 3*B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a
+ b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(-2*A + 3*B*n + 2*
B*n*Log[(a + b*x)/(c + d*x)])) - 6*b^2*(2*A^2 - 6*A*B*n + 7*B^2*n^2 + 2*B^2
*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + 3*B*n)*Log[(a + b*x)/(c +
 d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d
*x))^n]*(-2*A + 3*B*n + 2*B*n*Log[(a + b*x)/(c + d*x)]))*Log[c + d*x])/(12*
(b*c - a*d)^3*g*i^3)
```

fricas [B] time = 1.09, size = 1076, normalized size = 2.68

$$18\,A^2b^2c^2-24\,A^2abcd+6\,A^2a^2d^2+4\left(B^2b^2d^2n^2x^2+2\,B^2b^2cdn^2x+B^2b^2c^2n^2\right)\log\left(\frac{bx+a}{dx+c}\right)^3+3\left(15\,B^2b^2c^2-16\,B\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, a
lgorithm="fricas")
```

```
[Out] 1/12*(18*A^2*b^2*c^2 - 24*A^2*a*b*c*d + 6*A^2*a^2*d^2 + 4*(B^2*b^2*d^2*n^2*
x^2 + 2*B^2*b^2*c*d*n^2*x + B^2*b^2*c^2*n^2)*log((b*x + a)/(d*x + c))^3 + 3
*(15*B^2*b^2*c^2 - 16*B^2*a*b*c*d + B^2*a^2*d^2)*n^2 + 6*(3*B^2*b^2*c^2 - 4
*B^2*a*b*c*d + B^2*a^2*d^2 + 2*(B^2*b^2*c*d - B^2*a*b*d^2)*x + 2*(B^2*b^2*d
^2*x^2 + 2*B^2*b^2*c*d*x + B^2*b^2*c^2)*log((b*x + a)/(d*x + c)))*log(e)^2
+ 6*(2*A*B*b^2*c^2*n - (4*B^2*a*b*c*d - B^2*a^2*d^2)*n^2 - (3*B^2*b^2*d^2*n
^2 - 2*A*B*b^2*d^2*n)*x^2 + 2*(2*A*B*b^2*c*d*n - (2*B^2*b^2*c*d + B^2*a*b*d
^2)*n^2)*x)*log((b*x + a)/(d*x + c))^2 - 6*(7*A*B*b^2*c^2 - 8*A*B*a*b*c*d +
 A*B*a^2*d^2)*n + 6*(2*A^2*b^2*c*d - 2*A^2*a*b*d^2 + 7*(B^2*b^2*c*d - B^2*a
*b*d^2)*n^2 - 6*(A*B*b^2*c*d - A*B*a*b*d^2)*n)*x + 6*(6*A*B*b^2*c^2 - 8*A*B
*a*b*c*d + 2*A*B*a^2*d^2 + 2*(B^2*b^2*d^2*n*x^2 + 2*B^2*b^2*c*d*n*x + B^2*b
^2*c^2*n)*log((b*x + a)/(d*x + c))^2 - (7*B^2*b^2*c^2 - 8*B^2*a*b*c*d + B^2
*a^2*d^2)*n + 2*(2*A*B*b^2*c*d - 2*A*B*a*b*d^2 - 3*(B^2*b^2*c*d - B^2*a*b*d
^2)*n)*x + 2*(2*A*B*b^2*c^2 - (3*B^2*b^2*d^2*n - 2*A*B*b^2*d^2)*x^2 - (4*B^
```

```
2*a*b*c*d - B^2*a^2*d^2)*n + 2*(2*A*B*b^2*c*d - (2*B^2*b^2*c*d + B^2*a*b*d^
2)*n)*x)*log((b*x + a)/(d*x + c)))*log(e) + 6*(2*A^2*b^2*c^2 + (8*B^2*a*b*c
*d - B^2*a^2*d^2)*n^2 + (7*B^2*b^2*d^2*n^2 - 6*A*B*b^2*d^2*n + 2*A^2*b^2*d^
2)*x^2 - 2*(4*A*B*a*b*c*d - A*B*a^2*d^2)*n + 2*(2*A^2*b^2*c*d + (4*B^2*b^2*
c*d + 3*B^2*a*b*d^2)*n^2 - 2*(2*A*B*b^2*c*d + A*B*a*b*d^2)*n)*x)*log((b*x +
 a)/(d*x + c)))/((b^3*c^3*d^2 - 3*a*b^2*c^2*d^3 + 3*a^2*b*c*d^4 - a^3*d^5)*
g*i^3*x^2 + 2*(b^3*c^4*d - 3*a*b^2*c^3*d^2 + 3*a^2*b*c^2*d^3 - a^3*c*d^4)*g
*i^3*x + (b^3*c^5 - 3*a*b^2*c^4*d + 3*a^2*b*c^3*d^2 - a^3*c^2*d^3)*g*i^3)
```

giac [A] time = 8.67, size = 664, normalized size = 1.65

$$\frac{1}{12}\left(\frac{4\,B^2b^2in^2\log\left(\frac{bx+a}{dx+c}\right)^3}{b^2c^2g-2\,abcdg+a^2d^2g}-6\left(\frac{4\,(bx+a)B^2bdin^2}{\left(b^2c^2g-2\,abcdg+a^2d^2g\right)(dx+c)}-\frac{(bx+a)^2B^2d^2in^2}{\left(b^2c^2g-2\,abcdg+a^2d^2g\right)(dx+c)^2}-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, a
lgorithm="giac")
```

```
[Out] 1/12*(4*B^2*b^2*i*n^2*log((b*x + a)/(d*x + c))^3/(b^2*c^2*g - 2*a*b*c*d*g +
 a^2*d^2*g) - 6*(4*(b*x + a)*B^2*b*d*i*n^2/((b^2*c^2*g - 2*a*b*c*d*g + a^2*
d^2*g)*(d*x + c)) - (b*x + a)^2*B^2*d^2*i*n^2/((b^2*c^2*g - 2*a*b*c*d*g + a
^2*d^2*g)*(d*x + c)^2) - 2*(A*B*b^2*i*n + B^2*b^2*i*n)/(b^2*c^2*g - 2*a*b*c
*d*g + a^2*d^2*g))*log((b*x + a)/(d*x + c))^2 - 6*((B^2*d^2*i*n^2 - 2*A*B*d
^2*i*n - 2*B^2*d^2*i*n)*(b*x + a)^2/((b^2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*
(d*x + c)^2) - 8*(B^2*b*d*i*n^2 - A*B*b*d*i*n - B^2*b*d*i*n)*(b*x + a)/((b^
2*c^2*g - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c)))*log((b*x + a)/(d*x + c)) - 1
2*(A^2*b^2 + 2*A*B*b^2 + B^2*b^2)*log((b*x + a)/(d*x + c))/(b^2*c^2*g*i - 2
*a*b*c*d*g*i + a^2*d^2*g*i) + 3*(B^2*d^2*i*n^2 - 2*A*B*d^2*i*n - 2*B^2*d^2*
i*n + 2*A^2*d^2*i + 4*A*B*d^2*i + 2*B^2*d^2*i)*(b*x + a)^2/((b^2*c^2*g - 2*
a*b*c*d*g + a^2*d^2*g)*(d*x + c)^2) - 24*(2*B^2*b*d*i*n^2 - 2*A*B*b*d*i*n -
 2*B^2*b*d*i*n + A^2*b*d*i + 2*A*B*b*d*i + B^2*b*d*i)*(b*x + a)/((b^2*c^2*g
 - 2*a*b*c*d*g + a^2*d^2*g)*(d*x + c)))*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d
)^2)
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^2}{\left(bgx+ag\right)(dix+ci)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x)
```

maxima [B] time = 2.75, size = 2126, normalized size = 5.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)/(d*i*x+c*i)^3,x, a
lgorithm="maxima")
```

```
[Out] 1/2*B^2*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*g*i
^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 - 2*a
*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2
```

```
*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3 - 3*a*b
^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))*log(e*(b*x/(d*x + c) + a/(d*x +
 c))^n)^2 + A*B*((2*b*d*x + 3*b*c - a*d)/((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*
d^4)*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*g*i^3*x + (b^2*c
^4 - 2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b^2*log(b*x + a)/((b^3*c^3 - 3*a
*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3) - 2*b^2*log(d*x + c)/((b^3*c^3
 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3))*log(e*(b*x/(d*x + c) +
a/(d*x + c))^n) + 1/12*((45*b^2*c^2 - 48*a*b*c*d + 3*a^2*d^2 + 4*(b^2*d^2*x
^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^3 - 4*(b^2*d^2*x^2 + 2*b^2*c*d*x +
 b^2*c^2)*log(d*x + c)^3 + 18*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x
 + a)^2 + 6*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b
^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c)^2 + 42*(b^2*c*d - a*b*d^2)*x
 + 42*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 6*(7*b^2*d^2*x^2
 + 14*b^2*c*d*x + 7*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b
*x + a)^2 + 6*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x +
 c))*n^2/(b^3*c^5*g*i^3 - 3*a*b^2*c^4*d*g*i^3 + 3*a^2*b*c^3*d^2*g*i^3 - a^3
*c^2*d^3*g*i^3 + (b^3*c^3*d^2*g*i^3 - 3*a*b^2*c^2*d^3*g*i^3 + 3*a^2*b*c*d^4
*g*i^3 - a^3*d^5*g*i^3)*x^2 + 2*(b^3*c^4*d*g*i^3 - 3*a*b^2*c^3*d^2*g*i^3 +
3*a^2*b*c^2*d^3*g*i^3 - a^3*c*d^4*g*i^3)*x) - 6*(7*b^2*c^2 - 8*a*b*c*d + a^
2*d^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2
*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*
(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b
^2*c*d*x + 3*b^2*c^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)
)*log(d*x + c))*n*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(b^3*c^5*g*i^3 - 3
*a*b^2*c^4*d*g*i^3 + 3*a^2*b*c^3*d^2*g*i^3 - a^3*c^2*d^3*g*i^3 + (b^3*c^3*d
^2*g*i^3 - 3*a*b^2*c^2*d^3*g*i^3 + 3*a^2*b*c*d^4*g*i^3 - a^3*d^5*g*i^3)*x^2
 + 2*(b^3*c^4*d*g*i^3 - 3*a*b^2*c^3*d^2*g*i^3 + 3*a^2*b*c^2*d^3*g*i^3 - a^3
*c*d^4*g*i^3)*x))*B^2 - 1/2*(7*b^2*c^2 - 8*a*b*c*d + a^2*d^2 + 2*(b^2*d^2*x
^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x +
 b^2*c^2)*log(d*x + c)^2 + 6*(b^2*c*d - a*b*d^2)*x + 6*(b^2*d^2*x^2 + 2*b^2
*c*d*x + b^2*c^2)*log(b*x + a) - 2*(3*b^2*d^2*x^2 + 6*b^2*c*d*x + 3*b^2*c^2
 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a))*log(d*x + c))*A*B*
n/(b^3*c^5*g*i^3 - 3*a*b^2*c^4*d*g*i^3 + 3*a^2*b*c^3*d^2*g*i^3 - a^3*c^2*d^
3*g*i^3 + (b^3*c^3*d^2*g*i^3 - 3*a*b^2*c^2*d^3*g*i^3 + 3*a^2*b*c*d^4*g*i^3
- a^3*d^5*g*i^3)*x^2 + 2*(b^3*c^4*d*g*i^3 - 3*a*b^2*c^3*d^2*g*i^3 + 3*a^2*b
*c^2*d^3*g*i^3 - a^3*c*d^4*g*i^3)*x) + 1/2*A^2*((2*b*d*x + 3*b*c - a*d)/((b
^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*g*i^3*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^
2 + a^2*c*d^3)*g*i^3*x + (b^2*c^4 - 2*a*b*c^3*d + a^2*c^2*d^2)*g*i^3) + 2*b
^2*log(b*x + a)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*g*i^3)
 - 2*b^2*log(d*x + c)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*
g*i^3))
```

mupad [B] time = 8.73, size = 1007, normalized size = 2.50

$$\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^2\left(\frac{b^2\,\left(3\,B^2\,n-2\,A\,B\right)}{2\,g\,i^3\,n\,\left(a\,d-b\,c\right)\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)}+\frac{B^2\,b^2\,\left(\frac{c\,g\,i^3\,n\,\left(a\,d-b\,c\right)}{2\,b}-\frac{g\,i^3\,n\,\left(a\,d-b\,c\right)\,\left(a\,d-2\,b\,c\right)}{2\,b^2}\right.}{g\,i^3\,n\,\left(a\,d-b\,c\right)\,\left(a^2\,d^2-2\,a\,b\,c\,d+b^2\,c^2\right)\,\left(g\,c^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)*(c*i + d*i*x)^3
),x)
```

```
[Out] log(e*((a + b*x)/(c + d*x))^n)^2*((b^2*(3*B^2*n - 2*A*B))/(2*g*i^3*n*(a*d -
 b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (B^2*b^2*((c*g*i^3*n*(a*d - b*c))/
(2*b) - (g*i^3*n*(a*d - b*c)*(a*d - 2*b*c))/(2*b^2) + (d*g*i^3*n*x*(a*d - b
*c))/b))/(g*i^3*n*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(c^2*g*i^3 +
d^2*g*i^3*x^2 + 2*c*d*g*i^3*x))) - ((2*A^2*a*d - 6*A^2*b*c + B^2*a*d*n^2 -
```

```
15*B^2*b*c*n^2 - 2*A*B*a*d*n + 14*A*B*b*c*n)/(2*(a*d - b*c)) - (x*(2*A^2*b*
d + 7*B^2*b*d*n^2 - 6*A*B*b*d*n))/(a*d - b*c))/(x^2*(2*a*d^3*g*i^3 - 2*b*c*
d^2*g*i^3) + x*(4*a*c*d^2*g*i^3 - 4*b*c^2*d*g*i^3) - 2*b*c^3*g*i^3 + 2*a*c^
2*d*g*i^3) - log(e*((a + b*x)/(c + d*x))^n)*((B^2*n)/(x^2*(a*d^3*g*i^3 - b*
c*d^2*g*i^3) + x*(2*a*c*d^2*g*i^3 - 2*b*c^2*d*g*i^3) - b*c^3*g*i^3 + a*c^2*
d*g*i^3) + (b^2*(3*B^2*n - 2*A*B)*((c*g*i^3*n*(a*d - b*c)^2)/(2*b) - (g*i^3
*n*(a*d - b*c)^2*(a*d - 2*b*c))/(2*b^2) + (d*g*i^3*n*x*(a*d - b*c)^2)/b))/(
g*i^3*n*(a*d - b*c)*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)*(x^2*(a*d^3*g*i^3 - b*c
*d^2*g*i^3) + x*(2*a*c*d^2*g*i^3 - 2*b*c^2*d*g*i^3) - b*c^3*g*i^3 + a*c^2*d
*g*i^3))) + (b^2*atan((b^2*((a^3*d^3*g*i^3 + b^3*c^3*g*i^3 - a*b^2*c^2*d*g*
i^3 - a^2*b*c*d^2*g*i^3)/(a^2*d^2*g*i^3 + b^2*c^2*g*i^3 - 2*a*b*c*d*g*i^3)
+ 2*b*d*x)*(A^2 + (7*B^2*n^2)/2 - 3*A*B*n)*(a^2*d^2*g*i^3 + b^2*c^2*g*i^3 -
 2*a*b*c*d*g*i^3)*2i)/(g*i^3*(a*d - b*c)^3*(2*A^2*b^2 + 7*B^2*b^2*n^2 - 6*A
*B*b^2*n)))*(A^2 + (7*B^2*n^2)/2 - 3*A*B*n)*2i)/(g*i^3*(a*d - b*c)^3) - (B^
2*b^2*log(e*((a + b*x)/(c + d*x))^n)^3)/(3*g*i^3*n*(a*d - b*c)*(a^2*d^2 + b
^2*c^2 - 2*a*b*c*d))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)/(d*i*x+c*i)**3,x)
```

```
[Out] Timed out
```

3.207 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^2(ci+dix)^3}\,dx$

Optimal. Leaf size=562

$$-\frac{b^3(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{g^2i^3(a+bx)(bc-ad)^4}-\frac{2b^3Bn(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{g^2i^3(a+bx)(bc-ad)^4}-\frac{b^2d\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^3}{Bg^2i^3n(bc-ad)^4}-\frac{d^3}{}$$

```
[Out] -1/4*B^2*d^3*n^2*(b*x+a)^2/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2-6*A*b*B*d^2*n*(b*
x+a)/(-a*d+b*c)^4/g^2/i^3/(d*x+c)+6*b*B^2*d^2*n^2*(b*x+a)/(-a*d+b*c)^4/g^2/
i^3/(d*x+c)-2*b^3*B^2*n^2*(d*x+c)/(-a*d+b*c)^4/g^2/i^3/(b*x+a)-6*b*B^2*d^2*
n*(b*x+a)*ln(e*((b*x+a)/(d*x+c))^n)/(-a*d+b*c)^4/g^2/i^3/(d*x+c)+1/2*B*d^3*
n*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^2/i^3/(d*x+c)^2-
2*b^3*B*n*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^4/g^2/i^3/(b*x
+a)-1/2*d^3*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/g^2/i^
3/(d*x+c)^2+3*b*d^2*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/
g^2/i^3/(d*x+c)-b^3*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^4/
g^2/i^3/(b*x+a)-b^2*d*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+b*c)^4/g^2/
i^3/n
```

Rubi [C] time = 8.13, antiderivative size = 2207, normalized size of antiderivative = 3.93, number of steps used = 135, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.689, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i + d*i*x)
^3),x]
```

```
[Out] (-2*b^2*B^2*n^2)/((b*c - a*d)^3*g^2*i^3*(a + b*x)) - (B^2*d*n^2)/(4*(b*c -
a*d)^2*g^2*i^3*(c + d*x)^2) - (11*b*B^2*d*n^2)/(2*(b*c - a*d)^3*g^2*i^3*(c
+ d*x)) - (15*b^2*B^2*d*n^2*Log[a + b*x])/(2*(b*c - a*d)^4*g^2*i^3) + (3*A*
b^2*B*d*n*Log[a + b*x]^2)/((b*c - a*d)^4*g^2*i^3) - (3*b^2*B^2*d*n^2*Log[a
+ b*x]^2)/(2*(b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*Log[-((b*c - a*d)/(d*(a
+ b*x)))]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^2*i^3) + (3*b^
2*B^2*d*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^4*g^2*i
^3) - (2*b^2*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^3*g^2
*i^3*(a + b*x)) + (B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c -
a*d)^2*g^2*i^3*(c + d*x)^2) + (5*b*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))
^n]))/((b*c - a*d)^3*g^2*i^3*(c + d*x)) + (3*b^2*B*d*n*Log[a + b*x]*(A + B*
Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4*g^2*i^3) - (b^2*(A + B*Log[
e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^3*g^2*i^3*(a + b*x)) - (d*(A +
B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*(b*c - a*d)^2*g^2*i^3*(c + d*x)^2)
- (2*b*d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^3*g^2*i^3*(
c + d*x)) - (3*b^2*d*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)
/((b*c - a*d)^4*g^2*i^3) + (15*b^2*B^2*d*n^2*Log[c + d*x])/(2*(b*c - a*d)^4
*g^2*i^3) - (6*A*b^2*B*d*n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x])/
((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*n^2*Log[-((d*(a + b*x))/(b*c - a*d))
]*Log[c + d*x])/((b*c - a*d)^4*g^2*i^3) - (3*b^2*B^2*d*Log[(a + b*x)^n]^2*L
og[c + d*x])/((b*c - a*d)^4*g^2*i^3) - (3*b^2*B*d*n*(A + B*Log[e*((a + b*x)
/(c + d*x))^n])*Log[c + d*x])/((b*c - a*d)^4*g^2*i^3) + (3*b^2*d*(A + B*Log
[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/((b*c - a*d)^4*g^2*i^3) + (3*A
*b^2*B*d*n*Log[c + d*x]^2)/((b*c - a*d)^4*g^2*i^3) - (3*b^2*B^2*d*n^2*Log[c
```

```
 + d*x]^2)/(2*(b*c - a*d)^4*g^2*i^3) - (3*b^2*B^2*d*n^2*Log[a + b*x]*Log[c
+ d*x]^2)/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*n*Log[e*((a + b*x)/(c + d*
x))^n]*Log[c + d*x]^2)/((b*c - a*d)^4*g^2*i^3) + (b^2*B^2*d*n^2*Log[c + d*x
]^3)/((b*c - a*d)^4*g^2*i^3) - (6*A*b^2*B*d*n*Log[a + b*x]*Log[(b*(c + d*x)
)/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*n^2*Log[a + b*x]*Log
[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*Log[(a
+ b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) - (6*b^
2*B^2*d*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)])/((b*c - a*d)^4*g^2
*i^3) - (3*b^2*B^2*d*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^4*g^2
*i^3) + (3*b^2*B^2*d*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-n)]^
2)/((b*c - a*d)^4*g^2*i^3) + (6*b^2*B^2*d*n*Log[-((d*(a + b*x))/(b*c - a*d)
)]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c
 + d*x)^(-n)]))/((b*c - a*d)^4*g^2*i^3) - (6*A*b^2*B*d*n*PolyLog[2, -((d*(a
 + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^2*i^3) + (3*b^2*B^2*d*n^2*PolyLog[
2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g^2*i^3) + (6*b^2*B^2*d*n*
Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^4*g
^2*i^3) - (6*A*b^2*B*d*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d
)^4*g^2*i^3) + (3*b^2*B^2*d*n^2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*
c - a*d)^4*g^2*i^3) - (6*b^2*B^2*d*n*Log[(c + d*x)^(-n)]*PolyLog[2, (b*(c +
 d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) + (6*b^2*B^2*d*n*(Log[(a + b*x
)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)])*PolyLog[2, (b*
(c + d*x))/(b*c - a*d)])/((b*c - a*d)^4*g^2*i^3) - (6*b^2*B^2*d*n*Log[e*((a
 + b*x)/(c + d*x))^n]*PolyLog[2, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*
d)^4*g^2*i^3) - (6*b^2*B^2*d*n^2*PolyLog[3, -((d*(a + b*x))/(b*c - a*d))])/
((b*c - a*d)^4*g^2*i^3) - (6*b^2*B^2*d*n^2*PolyLog[3, (b*(c + d*x))/(b*c -
a*d)])/((b*c - a*d)^4*g^2*i^3) - (6*b^2*B^2*d*n^2*PolyLog[3, 1 + (b*c - a*d
)/(d*(a + b*x))])/((b*c - a*d)^4*g^2*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
```

```
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
```

```
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
```

```
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(207c+207dx)^3(ag+bgx)^2}\,dx = \int \left(\frac{b^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc-ad)^3g^2(a+bx)^2} - \frac{b^3d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{2956581(bc-ad)^4g^2(a+bx)} + \frac{d^2\left(A \cdots\right.}{88697\cdots}\right.$$

$$= -\frac{\left(b^3d\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}\,dx}{2956581(bc-ad)^4g^2} + \frac{\left(b^2d^2\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}\,dx}{2956581(bc-ad)^4g^2} + \frac{b^3\int \cdots}{88697\cdots}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc-ad)^3g^2(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17739486(bc-ad)^2g^2(c+dx)^2} - \frac{2bd\left(A \cdots\right.}{886974\cdots}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc-ad)^3g^2(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17739486(bc-ad)^2g^2(c+dx)^2} - \frac{2bd\left(A \cdots\right.}{886974\cdots}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc-ad)^3g^2(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17739486(bc-ad)^2g^2(c+dx)^2} - \frac{2bd\left(A \cdots\right.}{886974\cdots}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8869743(bc-ad)^3g^2(a+bx)} - \frac{d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17739486(bc-ad)^2g^2(c+dx)^2} - \frac{2bd\left(A \cdots\right.}{886974\cdots}$$

$$= -\frac{2b^2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8869743(bc-ad)^3g^2(a+bx)} + \frac{Bdn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17739486(bc-ad)^2g^2(c+dx)^2} + \frac{5bBd\cdots}{8869\cdots}$$

$$= \frac{b^2B^2d\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{2956581(bc-ad)^4g^2} - \frac{2b^2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8869743(bc-ad)^3g^2(a+bx)} + \frac{Bd\cdots}{1773\cdots}$$

$$= \frac{b^2B^2d\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{2956581(bc-ad)^4g^2} + \frac{b^2B^2d\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{2956581(bc-ad)^4g^2}$$

$$= -\frac{2b^2B^2n^2}{8869743(bc-ad)^3g^2(a+bx)} - \frac{B^2dn^2}{35478972(bc-ad)^2g^2(c+dx)^2} - \frac{\cdots}{177394\cdots}$$

$$= -\frac{2b^2B^2n^2}{8869743(bc-ad)^3g^2(a+bx)} - \frac{B^2dn^2}{35478972(bc-ad)^2g^2(c+dx)^2} - \frac{\cdots}{177394\cdots}$$

$$= -\frac{2b^2B^2n^2}{8869743(bc-ad)^3g^2(a+bx)} - \frac{B^2dn^2}{35478972(bc-ad)^2g^2(c+dx)^2} - \frac{\cdots}{177394\cdots}$$

$$= -\frac{2b^2B^2n^2}{8869743(bc-ad)^3g^2(a+bx)} - \frac{B^2dn^2}{35478972(bc-ad)^2g^2(c+dx)^2} - \frac{\cdots}{177394\cdots}$$

$$= -\frac{2b^2B^2n^2}{8869743(bc-ad)^3g^2(a+bx)} - \frac{B^2dn^2}{35478972(bc-ad)^2g^2(c+dx)^2} - \frac{\cdots}{177394\cdots}$$

Mathematica [B] time = 2.15, size = 1334, normalized size = 2.37

$$-\frac{4b^2B^2dn^2(a+bx)(c+dx)^2\log^3\left(\frac{a+bx}{c+dx}\right)+2Bn\left(6Ad^3x^3b^3-3Bd^3nx^3b^3+12Acd^2x^2b^3+2Bc^3nb^3+6Ac^2dxb^3\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^2*(c*i +
d*i*x)^3),x]
```

```
[Out] -1/4*(4*b^2*B^2*d*n^2*(a + b*x)*(c + d*x)^2*Log[(a + b*x)/(c + d*x)]^3 + 2*
B*n*Log[(a + b*x)/(c + d*x)]^2*(6*a*A*b^2*c^2*d + 2*b^3*B*c^3*n - 6*a^2*b*B
*c*d^2*n + a^3*B*d^3*n + 6*A*b^3*c^2*d*x + 12*a*A*b^2*c*d^2*x + 6*b^3*B*c^2
*d*n*x - 12*a*b^2*B*c*d^2*n*x - 3*a^2*b*B*d^3*n*x + 12*A*b^3*c*d^2*x^2 + 6*
a*A*b^2*d^3*x^2 - 9*a*b^2*B*d^3*n*x^2 + 6*A*b^3*d^3*x^3 - 3*b^3*B*d^3*n*x^3
 + 6*b^2*B*d*(a + b*x)*(c + d*x)^2*Log[e*((a + b*x)/(c + d*x))^n] - 6*b^2*B
*d*n*(a + b*x)*(c + d*x)^2*Log[(a + b*x)/(c + d*x)]) + 4*b^2*(b*c - a*d)*(c
 + d*x)^2*(A^2 + 2*A*B*n + 2*B^2*n^2 + B^2*Log[e*((a + b*x)/(c + d*x))^n]^2
 - 2*B*n*(A + B*n)*Log[(a + b*x)/(c + d*x)] + B^2*n^2*Log[(a + b*x)/(c + d*
x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(A + B*n - B*n*Log[(a + b*x)/(c
+ d*x)])) + 2*B*(b*c - a*d)*n*Log[(a + b*x)/(c + d*x)]*(2*b*d*(a + b*x)*(c
+ d*x)*(4*A - 5*B*n + 4*B*Log[e*((a + b*x)/(c + d*x))^n] - 4*B*n*Log[(a + b
*x)/(c + d*x)]) + d*(b*c - a*d)*(a + b*x)*(2*A - B*n + 2*B*Log[e*((a + b*x)
/(c + d*x))^n] - 2*B*n*Log[(a + b*x)/(c + d*x)]) + 4*b^2*(c + d*x)^2*(A + B
*n + B*Log[e*((a + b*x)/(c + d*x))^n] - B*n*Log[(a + b*x)/(c + d*x)])) + d*
(b*c - a*d)^2*(a + b*x)*(2*A^2 - 2*A*B*n + B^2*n^2 + 2*B^2*Log[e*((a + b*x)
/(c + d*x))^n]^2 + 2*B*n*(-2*A + B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*
Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(-2*A + B*n
 + 2*B*n*Log[(a + b*x)/(c + d*x)])) + 6*b^2*d*(a + b*x)*(c + d*x)^2*Log[a +
 b*x]*(2*A^2 - 2*A*B*n + 5*B^2*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2
 + 2*B*n*(-2*A + B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c
 + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(-2*A + B*n + 2*B*n*Log[(a
+ b*x)/(c + d*x)])) + 2*b*d*(b*c - a*d)*(a + b*x)*(c + d*x)*(4*A^2 - 10*A*B
*n + 11*B^2*n^2 + 4*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-4*A + 5*
B*n)*Log[(a + b*x)/(c + d*x)] + 4*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*
Log[e*((a + b*x)/(c + d*x))^n]*(-4*A + 5*B*n + 4*B*n*Log[(a + b*x)/(c + d*x
)])) - 6*b^2*d*(a + b*x)*(c + d*x)^2*(2*A^2 - 2*A*B*n + 5*B^2*n^2 + 2*B^2*L
og[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + B*n)*Log[(a + b*x)/(c + d*x
)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*x))
^n]*(-2*A + B*n + 2*B*n*Log[(a + b*x)/(c + d*x)]))*Log[c + d*x])/((b*c - a*
d)^4*g^2*i^3*(a + b*x)*(c + d*x)^2)
```

fricas [B] time = 0.74, size = 2057, normalized size = 3.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x,
 algorithm="fricas")
```

```
[Out] -1/4*(4*A^2*b^3*c^3 + 6*A^2*a*b^2*c^2*d - 12*A^2*a^2*b*c*d^2 + 2*A^2*a^3*d^
3 + 4*(B^2*b^3*d^3*n^2*x^3 + B^2*a*b^2*c^2*d*n^2 + (2*B^2*b^3*c*d^2 + B^2*a
*b^2*d^3)*n^2*x^2 + (B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2)*n^2*x)*log((b*x + a
)/(d*x + c))^3 + (8*B^2*b^3*c^3 + 15*B^2*a*b^2*c^2*d - 24*B^2*a^2*b*c*d^2 +
 B^2*a^3*d^3)*n^2 + 6*(2*A^2*b^3*c*d^2 - 2*A^2*a*b^2*d^3 + 5*(B^2*b^3*c*d^2
 - B^2*a*b^2*d^3)*n^2 - 2*(A*B*b^3*c*d^2 - A*B*a*b^2*d^3)*n)*x^2 + 2*(2*B^2
*b^3*c^3 + 3*B^2*a*b^2*c^2*d - 6*B^2*a^2*b*c*d^2 + B^2*a^3*d^3 + 6*(B^2*b^3
*c*d^2 - B^2*a*b^2*d^3)*x^2 + 3*(3*B^2*b^3*c^2*d - 2*B^2*a*b^2*c*d^2 - B^2*
a^2*b*d^3)*x + 6*(B^2*b^3*d^3*x^3 + B^2*a*b^2*c^2*d + (2*B^2*b^3*c*d^2 + B^
```

```
2*a*b^2*d^3)*x^2 + (B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2)*x)*log((b*x + a)/(d*
x + c)))*log(e)^2 + 2*(6*A*B*a*b^2*c^2*d*n - 3*(B^2*b^3*d^3*n^2 - 2*A*B*b^3
*d^3*n)*x^3 + (2*B^2*b^3*c^3 - 6*B^2*a^2*b*c*d^2 + B^2*a^3*d^3)*n^2 - 3*(3*
B^2*a*b^2*d^3*n^2 - 2*(2*A*B*b^3*c*d^2 + A*B*a*b^2*d^3)*n)*x^2 + 3*((2*B^2*
b^3*c^2*d - 4*B^2*a*b^2*c*d^2 - B^2*a^2*b*d^3)*n^2 + 2*(A*B*b^3*c^2*d + 2*A
*B*a*b^2*c*d^2)*n)*x)*log((b*x + a)/(d*x + c))^2 + 2*(4*A*B*b^3*c^3 - 15*A*
B*a*b^2*c^2*d + 12*A*B*a^2*b*c*d^2 - A*B*a^3*d^3)*n + 3*(6*A^2*b^3*c^2*d -
4*A^2*a*b^2*c*d^2 - 2*A^2*a^2*b*d^3 + (13*B^2*b^3*c^2*d - 6*B^2*a*b^2*c*d^2
 - 7*B^2*a^2*b*d^3)*n^2 - 2*(A*B*b^3*c^2*d + 2*A*B*a*b^2*c*d^2 - 3*A*B*a^2*
b*d^3)*n)*x + 2*(4*A*B*b^3*c^3 + 6*A*B*a*b^2*c^2*d - 12*A*B*a^2*b*c*d^2 + 2
*A*B*a^3*d^3 + 6*(2*A*B*b^3*c*d^2 - 2*A*B*a*b^2*d^3 - (B^2*b^3*c*d^2 - B^2*
a*b^2*d^3)*n)*x^2 + 6*(B^2*b^3*d^3*n*x^3 + B^2*a*b^2*c^2*d*n + (2*B^2*b^3*c
*d^2 + B^2*a*b^2*d^3)*n*x^2 + (B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2)*n*x)*log(
(b*x + a)/(d*x + c))^2 + (4*B^2*b^3*c^3 - 15*B^2*a*b^2*c^2*d + 12*B^2*a^2*b
*c*d^2 - B^2*a^3*d^3)*n + 3*(6*A*B*b^3*c^2*d - 4*A*B*a*b^2*c*d^2 - 2*A*B*a^
2*b*d^3 - (B^2*b^3*c^2*d + 2*B^2*a*b^2*c*d^2 - 3*B^2*a^2*b*d^3)*n)*x + 2*(6
*A*B*a*b^2*c^2*d - 3*(B^2*b^3*d^3*n - 2*A*B*b^3*d^3)*x^3 - 3*(3*B^2*a*b^2*d
^3*n - 4*A*B*b^3*c*d^2 - 2*A*B*a*b^2*d^3)*x^2 + (2*B^2*b^3*c^3 - 6*B^2*a^2*
b*c*d^2 + B^2*a^3*d^3)*n + 3*(2*A*B*b^3*c^2*d + 4*A*B*a*b^2*c*d^2 + (2*B^2*
b^3*c^2*d - 4*B^2*a*b^2*c*d^2 - B^2*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c
)))*log(e) + 2*(6*A^2*a*b^2*c^2*d + 3*(5*B^2*b^3*d^3*n^2 - 2*A*B*b^3*d^3*n
+ 2*A^2*b^3*d^3)*x^3 + (4*B^2*b^3*c^3 + 12*B^2*a^2*b*c*d^2 - B^2*a^3*d^3)*n
^2 - 3*(6*A*B*a*b^2*d^3*n - 4*A^2*b^3*c*d^2 - 2*A^2*a*b^2*d^3 - (8*B^2*b^3*
c*d^2 + 7*B^2*a*b^2*d^3)*n^2)*x^2 + 2*(2*A*B*b^3*c^3 - 6*A*B*a^2*b*c*d^2 +
A*B*a^3*d^3)*n + 3*(2*A^2*b^3*c^2*d + 4*A^2*a*b^2*c*d^2 + (4*B^2*b^3*c^2*d
+ 8*B^2*a*b^2*c*d^2 + 3*B^2*a^2*b*d^3)*n^2 + 2*(2*A*B*b^3*c^2*d - 4*A*B*a*b
^2*c*d^2 - A*B*a^2*b*d^3)*n)*x)*log((b*x + a)/(d*x + c)))/((b^5*c^4*d^2 - 4
*a*b^4*c^3*d^3 + 6*a^2*b^3*c^2*d^4 - 4*a^3*b^2*c*d^5 + a^4*b*d^6)*g^2*i^3*x
^3 + (2*b^5*c^5*d - 7*a*b^4*c^4*d^2 + 8*a^2*b^3*c^3*d^3 - 2*a^3*b^2*c^2*d^4
 - 2*a^4*b*c*d^5 + a^5*d^6)*g^2*i^3*x^2 + (b^5*c^6 - 2*a*b^4*c^5*d - 2*a^2*
b^3*c^4*d^2 + 8*a^3*b^2*c^3*d^3 - 7*a^4*b*c^2*d^4 + 2*a^5*c*d^5)*g^2*i^3*x
+ (a*b^4*c^6 - 4*a^2*b^3*c^5*d + 6*a^3*b^2*c^4*d^2 - 4*a^4*b*c^3*d^3 + a^5*
c^2*d^4)*g^2*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)^{2}\left(dix+ci\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x)
```

maxima [B] time = 4.83, size = 4199, normalized size = 7.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^2/(d*i*x+c*i)^3,x,
 algorithm="maxima")
```

```
[Out] -1/2*B^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d +
 a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)
*g^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c
*d^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 +
5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3
*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4
*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^
2*d*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*
d^3 + a^4*d^4)*g^2*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2 - A*B*((6
*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d + a*b*d^2)*x)
/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*g^2*i^3*x^3
 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d
^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*
d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d
^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x + a)/((b^4*c^4 - 4*a*b^3*c^3*d
 + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3) - 6*b^2*d*log(d*x
+ c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^
4)*g^2*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) - 1/4*((8*b^3*c^3 + 15*
a*b^2*c^2*d - 24*a^2*b*c*d^2 + a^3*d^3 + 4*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*
b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a)^3
- 4*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d
 + 2*a*b^2*c*d^2)*x)*log(d*x + c)^3 + 30*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 6*(b
^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a
*b^2*c*d^2)*x)*log(b*x + a)^2 + 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2
 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x + 2*(b^3*d^3*x^3 + a*b^2*
c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(
b*x + a))*log(d*x + c)^2 + 3*(13*b^3*c^2*d - 6*a*b^2*c*d^2 - 7*a^2*b*d^3)*x
 + 30*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2
*d + 2*a*b^2*c*d^2)*x)*log(b*x + a) - 6*(5*b^3*d^3*x^3 + 5*a*b^2*c^2*d + 5*
(2*b^3*c*d^2 + a*b^2*d^3)*x^2 + 2*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2
 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a)^2 + 5*(b^3*
c^2*d + 2*a*b^2*c*d^2)*x + 2*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*
b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a))*log(d*x + c))*n
^2/(a*b^4*c^6*g^2*i^3 - 4*a^2*b^3*c^5*d*g^2*i^3 + 6*a^3*b^2*c^4*d^2*g^2*i^3
 - 4*a^4*b*c^3*d^3*g^2*i^3 + a^5*c^2*d^4*g^2*i^3 + (b^5*c^4*d^2*g^2*i^3 - 4
*a*b^4*c^3*d^3*g^2*i^3 + 6*a^2*b^3*c^2*d^4*g^2*i^3 - 4*a^3*b^2*c*d^5*g^2*i^
3 + a^4*b*d^6*g^2*i^3)*x^3 + (2*b^5*c^5*d*g^2*i^3 - 7*a*b^4*c^4*d^2*g^2*i^3
 + 8*a^2*b^3*c^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*d^4*g^2*i^3 - 2*a^4*b*c*d^5*g^
2*i^3 + a^5*d^6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i^3 - 2*a*b^4*c^5*d*g^2*i^3 - 2
*a^2*b^3*c^4*d^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*g^2*i^3 - 7*a^4*b*c^2*d^4*g^2*
i^3 + 2*a^5*c*d^5*g^2*i^3)*x) + 2*(4*b^3*c^3 - 15*a*b^2*c^2*d + 12*a^2*b*c*
d^2 - a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*
d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x
+ a)^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^
3*c^2*d + 2*a*b^2*c*d^2)*x)*log(d*x + c)^2 - 3*(b^3*c^2*d + 2*a*b^2*c*d^2 -
 3*a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*
x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a) + 6*(b^3*d^3*x^3 + a*b^2*
c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x + 2*(
b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*
a*b^2*c*d^2)*x)*log(b*x + a))*log(d*x + c))*n*log(e*(b*x/(d*x + c) + a/(d*x
 + c))^n)/(a*b^4*c^6*g^2*i^3 - 4*a^2*b^3*c^5*d*g^2*i^3 + 6*a^3*b^2*c^4*d^2*
g^2*i^3 - 4*a^4*b*c^3*d^3*g^2*i^3 + a^5*c^2*d^4*g^2*i^3 + (b^5*c^4*d^2*g^2*
i^3 - 4*a*b^4*c^3*d^3*g^2*i^3 + 6*a^2*b^3*c^2*d^4*g^2*i^3 - 4*a^3*b^2*c*d^5
*g^2*i^3 + a^4*b*d^6*g^2*i^3)*x^3 + (2*b^5*c^5*d*g^2*i^3 - 7*a*b^4*c^4*d^2*
g^2*i^3 + 8*a^2*b^3*c^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*d^4*g^2*i^3 - 2*a^4*b*c
```

```
*d^5*g^2*i^3 + a^5*d^6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i^3 - 2*a*b^4*c^5*d*g^2*
i^3 - 2*a^2*b^3*c^4*d^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*g^2*i^3 - 7*a^4*b*c^2*d
^4*g^2*i^3 + 2*a^5*c*d^5*g^2*i^3)*x))*B^2 - 1/2*(4*b^3*c^3 - 15*a*b^2*c^2*d
 + 12*a^2*b*c*d^2 - a^3*d^3 - 6*(b^3*c*d^2 - a*b^2*d^3)*x^2 - 6*(b^3*d^3*x^
3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^
2)*x)*log(b*x + a)^2 - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*
d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(d*x + c)^2 - 3*(b^3*c^2*d + 2
*a*b^2*c*d^2 - 3*a^2*b*d^3)*x - 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2
 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a) + 6*(b^3*d^
3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d + 2*a*b^2*
c*d^2)*x + 2*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (
b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a))*log(d*x + c))*A*B*n/(a*b^4*c^6*
g^2*i^3 - 4*a^2*b^3*c^5*d*g^2*i^3 + 6*a^3*b^2*c^4*d^2*g^2*i^3 - 4*a^4*b*c^3
*d^3*g^2*i^3 + a^5*c^2*d^4*g^2*i^3 + (b^5*c^4*d^2*g^2*i^3 - 4*a*b^4*c^3*d^3
*g^2*i^3 + 6*a^2*b^3*c^2*d^4*g^2*i^3 - 4*a^3*b^2*c*d^5*g^2*i^3 + a^4*b*d^6*
g^2*i^3)*x^3 + (2*b^5*c^5*d*g^2*i^3 - 7*a*b^4*c^4*d^2*g^2*i^3 + 8*a^2*b^3*c
^3*d^3*g^2*i^3 - 2*a^3*b^2*c^2*d^4*g^2*i^3 - 2*a^4*b*c*d^5*g^2*i^3 + a^5*d^
6*g^2*i^3)*x^2 + (b^5*c^6*g^2*i^3 - 2*a*b^4*c^5*d*g^2*i^3 - 2*a^2*b^3*c^4*d
^2*g^2*i^3 + 8*a^3*b^2*c^3*d^3*g^2*i^3 - 7*a^4*b*c^2*d^4*g^2*i^3 + 2*a^5*c*
d^5*g^2*i^3)*x) - 1/2*A^2*((6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2
 + 3*(3*b^2*c*d + a*b*d^2)*x)/((b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c
*d^4 - a^3*b*d^5)*g^2*i^3*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*
c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)*g^2*i^3*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a
^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*g^2*i^3*x + (a*b^3*c^5 - 3*
a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2 - a^4*c^2*d^3)*g^2*i^3) + 6*b^2*d*log(b*x +
 a)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4
)*g^2*i^3) - 6*b^2*d*log(d*x + c)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2
*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*g^2*i^3))
```

mupad [B] time = 10.14, size = 1785, normalized size = 3.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^2*(c*i + d*i*x)
^3),x)
```

```
[Out] ((4*A^2*b^2*c^2 - 2*A^2*a^2*d^2 - B^2*a^2*d^2*n^2 + 8*B^2*b^2*c^2*n^2 + 10*
A^2*a*b*c*d + 2*A*B*a^2*d^2*n + 8*A*B*b^2*c^2*n + 23*B^2*a*b*c*d*n^2 - 22*A
*B*a*b*c*d*n)/(2*(a*d - b*c)) + (3*x^2*(2*A^2*b^2*d^2 + 5*B^2*b^2*d^2*n^2 -
 2*A*B*b^2*d^2*n))/(a*d - b*c) + (3*x*(2*A^2*a*b*d^2 + 6*A^2*b^2*c*d + 7*B^
2*a*b*d^2*n^2 + 13*B^2*b^2*c*d*n^2 - 6*A*B*a*b*d^2*n - 2*A*B*b^2*c*d*n))/(2
*(a*d - b*c)))/(x*(2*b^3*c^4*g^2*i^3 + 4*a^3*c*d^3*g^2*i^3 - 6*a^2*b*c^2*d^
2*g^2*i^3) + x^2*(2*a^3*d^4*g^2*i^3 + 4*b^3*c^3*d*g^2*i^3 - 6*a*b^2*c^2*d^2
*g^2*i^3) + x^3*(2*b^3*c^2*d^2*g^2*i^3 + 2*a^2*b*d^4*g^2*i^3 - 4*a*b^2*c*d^
3*g^2*i^3) + 2*a^3*c^2*d^2*g^2*i^3 + 2*a*b^2*c^4*g^2*i^3 - 4*a^2*b*c^3*d*g^
2*i^3) - log(e*((a + b*x)/(c + d*x))^n)^2*(((B^2*(a*d + 2*b*c))/(2*(a^2*d^2
 + b^2*c^2 - 2*a*b*c*d)) + (3*B^2*b*d*x)/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)
))/(x*(b*c^2*g^2*i^3 + 2*a*c*d*g^2*i^3) + x^2*(a*d^2*g^2*i^3 + 2*b*c*d*g^2*
i^3) + a*c^2*g^2*i^3 + b*d^2*g^2*i^3*x^3) + (3*B*b^2*d*(2*A - B*n))/(2*g^2*
i^3*n*(a*d - b*c)^4) - (3*B^2*b^2*d*(d*g^2*i^3*n*x^2*(a*d - b*c) + (a*c*g^2
*i^3*n*(a*d - b*c))/b + (g^2*i^3*n*x*(a*d + b*c)*(a*d - b*c))/b))/(g^2*i^3*
n*(a*d - b*c)^4*(x*(b*c^2*g^2*i^3 + 2*a*c*d*g^2*i^3) + x^2*(a*d^2*g^2*i^3 +
 2*b*c*d*g^2*i^3) + a*c^2*g^2*i^3 + b*d^2*g^2*i^3*x^3))) - log(e*((a + b*x)
/(c + d*x))^n)*((x*((3*B^2*b*d*n)/2 + 3*A*B*b*d) - (B^2*a*d*n)/2 + 2*B^2*b*
c*n + A*B*a*d + 2*A*B*b*c)/(x*(b^3*c^4*g^2*i^3 + 2*a^3*c*d^3*g^2*i^3 - 3*a^
2*b*c^2*d^2*g^2*i^3) + x^2*(a^3*d^4*g^2*i^3 + 2*b^3*c^3*d*g^2*i^3 - 3*a*b^2
*c^2*d^2*g^2*i^3) + x^3*(b^3*c^2*d^2*g^2*i^3 + a^2*b*d^4*g^2*i^3 - 2*a*b^2*
c*d^3*g^2*i^3) + a^3*c^2*d^2*g^2*i^3 + a*b^2*c^4*g^2*i^3 - 2*a^2*b*c^3*d*g^
2*i^3) - (3*B*b^2*d*(2*A - B*n)*(d*g^2*i^3*n*x^2*(a*d - b*c)^3 + (g^2*i^3*n
```

```
*x*(a*d + b*c)*(a*d - b*c)^3)/b + (a*c*g^2*i^3*n*(a*d - b*c)^3)/b))/(g^2*i^
3*n*(a*d - b*c)^4*(x*(b^3*c^4*g^2*i^3 + 2*a^3*c*d^3*g^2*i^3 - 3*a^2*b*c^2*d
^2*g^2*i^3) + x^2*(a^3*d^4*g^2*i^3 + 2*b^3*c^3*d*g^2*i^3 - 3*a*b^2*c^2*d^2*
g^2*i^3) + x^3*(b^3*c^2*d^2*g^2*i^3 + a^2*b*d^4*g^2*i^3 - 2*a*b^2*c*d^3*g^2
*i^3) + a^3*c^2*d^2*g^2*i^3 + a*b^2*c^4*g^2*i^3 - 2*a^2*b*c^3*d*g^2*i^3)))
+ (b^2*d*atan((b^2*d*(2*A^2 + 5*B^2*n^2 - 2*A*B*n)*(2*a^4*d^4*g^2*i^3 - 2*b
^4*c^4*g^2*i^3 + 4*a*b^3*c^3*d*g^2*i^3 - 4*a^3*b*c*d^3*g^2*i^3)*3i)/(2*g^2*
i^3*(a*d - b*c)^4*(6*A^2*b^2*d + 15*B^2*b^2*d*n^2 - 6*A*B*b^2*d*n)) + (b^3*
d^2*x*(2*A^2 + 5*B^2*n^2 - 2*A*B*n)*(a^3*d^3*g^2*i^3 - b^3*c^3*g^2*i^3 + 3*
a*b^2*c^2*d*g^2*i^3 - 3*a^2*b*c*d^2*g^2*i^3)*6i)/(g^2*i^3*(a*d - b*c)^4*(6*
A^2*b^2*d + 15*B^2*b^2*d*n^2 - 6*A*B*b^2*d*n)))*(2*A^2 + 5*B^2*n^2 - 2*A*B*
n)*3i)/(g^2*i^3*(a*d - b*c)^4) - (B^2*b^2*d*log(e*((a + b*x)/(c + d*x))^n)^
3)/(g^2*i^3*n*(a*d - b*c)^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**2/(d*i*x+c*i)**3
,x)
```

```
[Out] Timed out
```

3.208 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^3(ci+dix)^3}\,dx$

Optimal. Leaf size=732

$$-\frac{b^4(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{2g^3i^3(a+bx)^2(bc-ad)^5}-\frac{b^4Bn(c+dx)^2\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{2g^3i^3(a+bx)^2(bc-ad)^5}+\frac{4b^3d(c+dx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{g^3i^3(a+bx)(bc-ad)^5}$$

```
[Out] 1/4*B^2*d^4*n^2*(b*x+a)^2/(-a*d+b*c)^5/g^3/i^3/(d*x+c)^2+8*A*b*B*d^3*n*(b*x
+a)/(-a*d+b*c)^5/g^3/i^3/(d*x+c)-8*b*B^2*d^3*n^2*(b*x+a)/(-a*d+b*c)^5/g^3/i
^3/(d*x+c)+8*b^3*B^2*d*n^2*(d*x+c)/(-a*d+b*c)^5/g^3/i^3/(b*x+a)-1/4*b^4*B^2
*n^2*(d*x+c)^2/(-a*d+b*c)^5/g^3/i^3/(b*x+a)^2+8*b*B^2*d^3*n*(b*x+a)*ln(e*((
b*x+a)/(d*x+c))^n)/(-a*d+b*c)^5/g^3/i^3/(d*x+c)-1/2*B*d^4*n*(b*x+a)^2*(A+B*
ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^3/i^3/(d*x+c)^2+8*b^3*B*d*n*(d*x+
c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^3/i^3/(b*x+a)-1/2*b^4*B*n
*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^5/g^3/i^3/(b*x+a)^2+1
/2*d^4*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^5/g^3/i^3/(d*
x+c)^2-4*b*d^3*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^5/g^3/i
^3/(d*x+c)+4*b^3*d*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^5/g
^3/i^3/(b*x+a)-1/2*b^4*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*
c)^5/g^3/i^3/(b*x+a)^2+2*b^2*d^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^3/B/(-a*d+
b*c)^5/g^3/i^3/n
```

Rubi [C] time = 9.23, antiderivative size = 2041, normalized size of antiderivative = 2.79, number of steps used = 163, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.689, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^3*(c*i + d*i*x)
^3),x]
```

```
[Out] -(b^2*B^2*n^2)/(4*(b*c - a*d)^3*g^3*i^3*(a + b*x)^2) + (15*b^2*B^2*d*n^2)/(
2*(b*c - a*d)^4*g^3*i^3*(a + b*x)) + (B^2*d^2*n^2)/(4*(b*c - a*d)^3*g^3*i^3
*(c + d*x)^2) + (15*b*B^2*d^2*n^2)/(2*(b*c - a*d)^4*g^3*i^3*(c + d*x)) + (1
5*b^2*B^2*d^2*n^2*Log[a + b*x])/((b*c - a*d)^5*g^3*i^3) - (6*A*b^2*B*d^2*n*
Log[a + b*x]^2)/((b*c - a*d)^5*g^3*i^3) - (6*b^2*B^2*d^2*Log[-((b*c - a*d)/
(d*(a + b*x)))]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^5*g^3*i^3) -
 (6*b^2*B^2*d^2*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)
^5*g^3*i^3) - (b^2*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*
d)^3*g^3*i^3*(a + b*x)^2) + (7*b^2*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))
^n]))/((b*c - a*d)^4*g^3*i^3*(a + b*x)) - (B*d^2*n*(A + B*Log[e*((a + b*x)/
(c + d*x))^n]))/(2*(b*c - a*d)^3*g^3*i^3*(c + d*x)^2) - (7*b*B*d^2*n*(A + B
*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^4*g^3*i^3*(c + d*x)) - (b^2*
(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*(b*c - a*d)^3*g^3*i^3*(a + b*x
)^2) + (3*b^2*d*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^4*g^
3*i^3*(a + b*x)) + (d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*(b*c -
 a*d)^3*g^3*i^3*(c + d*x)^2) + (3*b*d^2*(A + B*Log[e*((a + b*x)/(c + d*x))^
n])^2)/((b*c - a*d)^4*g^3*i^3*(c + d*x)) + (6*b^2*d^2*Log[a + b*x]*(A + B*L
og[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^5*g^3*i^3) - (15*b^2*B^2*d^2
*n^2*Log[c + d*x])/((b*c - a*d)^5*g^3*i^3) + (12*A*b^2*B*d^2*n*Log[-((d*(a
+ b*x))/(b*c - a*d))]*Log[c + d*x])/((b*c - a*d)^5*g^3*i^3) + (6*b^2*B^2*d^
2*Log[(a + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)^5*g^3*i^3) - (6*b^2*d^2*(A
```

```
+ B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*x])/((b*c - a*d)^5*g^3*i^3)
 - (6*A*b^2*B*d^2*n*Log[c + d*x]^2)/((b*c - a*d)^5*g^3*i^3) + (6*b^2*B^2*d^
2*n^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^5*g^3*i^3) - (6*b^2*B^2*d^2
*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2)/((b*c - a*d)^5*g^3*i^3) -
 (2*b^2*B^2*d^2*n^2*Log[c + d*x]^3)/((b*c - a*d)^5*g^3*i^3) + (12*A*b^2*B*d
^2*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^3*i^3) -
 (6*b^2*B^2*d^2*Log[(a + b*x)^n]^2*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c -
a*d)^5*g^3*i^3) + (12*b^2*B^2*d^2*n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)
^(-n)])/((b*c - a*d)^5*g^3*i^3) + (6*b^2*B^2*d^2*Log[a + b*x]*Log[(c + d*x)
^(-n)]^2)/((b*c - a*d)^5*g^3*i^3) - (6*b^2*B^2*d^2*Log[-((d*(a + b*x))/(b*c
 - a*d))]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^5*g^3*i^3) - (12*b^2*B^2*d^2*
n*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*
((a + b*x)/(c + d*x))^n] + Log[(c + d*x)^(-n)]))/((b*c - a*d)^5*g^3*i^3) +
(12*A*b^2*B*d^2*n*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^5*
g^3*i^3) - (12*b^2*B^2*d^2*n*Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b
*c - a*d))])/((b*c - a*d)^5*g^3*i^3) + (12*A*b^2*B*d^2*n*PolyLog[2, (b*(c +
 d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^3*i^3) + (12*b^2*B^2*d^2*n*Log[(c + d
*x)^(-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^3*i^3) -
(12*b^2*B^2*d^2*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[
(c + d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^3*
i^3) + (12*b^2*B^2*d^2*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 + (b*c
 - a*d)/(d*(a + b*x))])/((b*c - a*d)^5*g^3*i^3) + (12*b^2*B^2*d^2*n^2*PolyL
og[3, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^5*g^3*i^3) + (12*b^2*B^2*
d^2*n^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^5*g^3*i^3) + (1
2*b^2*B^2*d^2*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^5
*g^3*i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
```

```
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
```

```
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(208c+208dx)^3(ag+bgx)^3}\,dx = \int \left(\frac{b^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc-ad)^3g^3(a+bx)^3} - \frac{3b^3d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc-ad)^4g^3(a+bx)^2} + \frac{3b^3d^2}{449}\right.$$

$$= \frac{\left(3b^3d^2\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{a+bx}\,dx}{4499456(bc-ad)^5g^3} - \frac{\left(3b^2d^3\right)\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{c+dx}\,dx}{4499456(bc-ad)^5g^3} - \frac{\left(3b^3d\right)}{89}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17997824(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc-ad)^4g^3(a+bx)} + \frac{d^2}{17997}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17997824(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc-ad)^4g^3(a+bx)} + \frac{d^2}{17997}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17997824(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc-ad)^4g^3(a+bx)} + \frac{d^2}{17997}$$

$$= -\frac{b^2\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{17997824(bc-ad)^3g^3(a+bx)^2} + \frac{3b^2d\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{8998912(bc-ad)^4g^3(a+bx)} + \frac{d^2}{17997}$$

$$= -\frac{b^2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17997824(bc-ad)^3g^3(a+bx)^2} + \frac{7b^2Bdn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{8998912(bc-ad)^4g^3(a+bx)} - \frac{Bd^2}{1799}$$

$$= -\frac{3b^2B^2d^2\log(a+bx)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{4499456(bc-ad)^5g^3} - \frac{b^2Bn\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{17997824(bc-ad)^3g^3(a+bx)^2} +$$

$$= -\frac{3b^2B^2d^2\log\left(-\frac{bc-ad}{d(a+bx)}\right)\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{4499456(bc-ad)^5g^3} - \frac{3b^2B^2d^2\log(a+bx)\log^2\left(e\left(\frac{a+}{c+}\right.\right.}{4499456(bc-ad)^5g^3}$$

$$= -\frac{b^2B^2n^2}{35995648(bc-ad)^3g^3(a+bx)^2} + \frac{15b^2B^2dn^2}{17997824(bc-ad)^4g^3(a+bx)} + \frac{}{35995}$$

$$= -\frac{b^2B^2n^2}{35995648(bc-ad)^3g^3(a+bx)^2} + \frac{15b^2B^2dn^2}{17997824(bc-ad)^4g^3(a+bx)} + \frac{}{35995}$$

$$= -\frac{b^2B^2n^2}{35995648(bc-ad)^3g^3(a+bx)^2} + \frac{15b^2B^2dn^2}{17997824(bc-ad)^4g^3(a+bx)} + \frac{}{35995}$$

$$= -\frac{b^2B^2n^2}{35995648(bc-ad)^3g^3(a+bx)^2} + \frac{15b^2B^2dn^2}{17997824(bc-ad)^4g^3(a+bx)} + \frac{}{35995}$$

$$= -\frac{b^2B^2n^2}{35995648(bc-ad)^3g^3(a+bx)^2} + \frac{15b^2B^2dn^2}{17997824(bc-ad)^4g^3(a+bx)} + \frac{}{35995}$$

Mathematica [B] time = 2.67, size = 1653, normalized size = 2.26

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^3*(c*i +
d*i*x)^3),x]
```

```
[Out] (8*b^2*B^2*d^2*n^2*(a + b*x)^2*(c + d*x)^2*Log[(a + b*x)/(c + d*x)]^3 + 2*B
*n*Log[(a + b*x)/(c + d*x)]^2*(12*a^2*A*b^2*c^2*d^2 - b^4*B*c^4*n + 8*a*b^3
*B*c^3*d*n - 8*a^3*b*B*c*d^3*n + a^4*B*d^4*n + 24*a*A*b^3*c^2*d^2*x + 24*a^
2*A*b^2*c*d^3*x + 4*b^4*B*c^3*d*n*x + 24*a*b^3*B*c^2*d^2*n*x - 24*a^2*b^2*B
*c*d^3*n*x - 4*a^3*b*B*d^4*n*x + 12*A*b^4*c^2*d^2*x^2 + 48*a*A*b^3*c*d^3*x^
2 + 12*a^2*A*b^2*d^4*x^2 + 18*b^4*B*c^2*d^2*n*x^2 - 18*a^2*b^2*B*d^4*n*x^2
+ 24*A*b^4*c*d^3*x^3 + 24*a*A*b^3*d^4*x^3 + 12*b^4*B*c*d^3*n*x^3 - 12*a*b^3
*B*d^4*n*x^3 + 12*A*b^4*d^4*x^4 + 12*b^2*B*d^2*(a + b*x)^2*(c + d*x)^2*Log[
e*((a + b*x)/(c + d*x))^n] - 12*b^2*B*d^2*n*(a + b*x)^2*(c + d*x)^2*Log[(a
+ b*x)/(c + d*x)]) + 12*b^2*d^2*(a + b*x)^2*(c + d*x)^2*Log[a + b*x]*(2*A^2
 + 5*B^2*n^2 + 4*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c +
 d*x)]) + 2*B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)
])^2) + 2*b^2*d*(b*c - a*d)*(a + b*x)*(c + d*x)^2*(6*A^2 + 14*A*B*n + 15*B^
2*n^2 + 6*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 2*B*n*(6*A + 7*B*n)*Log[(a
 + b*x)/(c + d*x)] + 6*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a +
 b*x)/(c + d*x))^n]*(6*A + 7*B*n - 6*B*n*Log[(a + b*x)/(c + d*x)])) - b^2*(
b*c - a*d)^2*(c + d*x)^2*(2*A^2 + 2*A*B*n + B^2*n^2 + 2*B^2*Log[e*((a + b*x
)/(c + d*x))^n]^2 - 2*B*n*(2*A + B*n)*Log[(a + b*x)/(c + d*x)] + 2*B^2*n^2*
Log[(a + b*x)/(c + d*x)]^2 + 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(2*A + B*n
- 2*B*n*Log[(a + b*x)/(c + d*x)])) + 2*B*(b*c - a*d)*n*Log[(a + b*x)/(c + d
*x)]*(2*b*d^2*(a + b*x)^2*(c + d*x)*(6*A - 7*B*n + 6*B*Log[e*((a + b*x)/(c
+ d*x))^n] - 6*B*n*Log[(a + b*x)/(c + d*x)]) + 2*b^2*d*(a + b*x)*(c + d*x)^
2*(6*A + 7*B*n + 6*B*Log[e*((a + b*x)/(c + d*x))^n] - 6*B*n*Log[(a + b*x)/(
c + d*x)]) + d^2*(b*c - a*d)*(a + b*x)^2*(2*A - B*n + 2*B*Log[e*((a + b*x)/
(c + d*x))^n] - 2*B*n*Log[(a + b*x)/(c + d*x)]) - b^2*(b*c - a*d)*(c + d*x)
^2*(2*A + B*n + 2*B*Log[e*((a + b*x)/(c + d*x))^n] - 2*B*n*Log[(a + b*x)/(c
 + d*x)])) + d^2*(b*c - a*d)^2*(a + b*x)^2*(2*A^2 - 2*A*B*n + B^2*n^2 + 2*B
^2*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + B*n)*Log[(a + b*x)/(c +
 d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d
*x))^n]*(-2*A + B*n + 2*B*n*Log[(a + b*x)/(c + d*x)])) + 2*b*d^2*(b*c - a*d
)*(a + b*x)^2*(c + d*x)*(6*A^2 - 14*A*B*n + 15*B^2*n^2 + 6*B^2*Log[e*((a +
b*x)/(c + d*x))^n]^2 + 2*B*n*(-6*A + 7*B*n)*Log[(a + b*x)/(c + d*x)] + 6*B^
2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*x))^n]*(-6*A
 + 7*B*n + 6*B*n*Log[(a + b*x)/(c + d*x)])) - 12*b^2*d^2*(a + b*x)^2*(c + d
*x)^2*(2*A^2 + 5*B^2*n^2 + 4*A*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a
 + b*x)/(c + d*x)]) + 2*B^2*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a + b*
x)/(c + d*x)])^2)*Log[c + d*x])/(4*(b*c - a*d)^5*g^3*i^3*(a + b*x)^2*(c + d
*x)^2)
```

fricas [B] time = 1.32, size = 3062, normalized size = 4.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x,
 algorithm="fricas")
```

```
[Out] -1/4*(2*A^2*b^4*c^4 - 16*A^2*a*b^3*c^3*d + 16*A^2*a^3*b*c*d^3 - 2*A^2*a^4*d
^4 - 12*(2*A^2*b^4*c*d^3 - 2*A^2*a*b^3*d^4 + 5*(B^2*b^4*c*d^3 - B^2*a*b^3*d
^4)*n^2)*x^3 - 8*(B^2*b^4*d^4*n^2*x^4 + B^2*a^2*b^2*c^2*d^2*n^2 + 2*(B^2*b^
4*c*d^3 + B^2*a*b^3*d^4)*n^2*x^3 + (B^2*b^4*c^2*d^2 + 4*B^2*a*b^3*c*d^3 + B
```

```
^2*a^2*b^2*d^4)*n^2*x^2 + 2*(B^2*a*b^3*c^2*d^2 + B^2*a^2*b^2*c*d^3)*n^2*x)*
log((b*x + a)/(d*x + c))^3 + (B^2*b^4*c^4 - 32*B^2*a*b^3*c^3*d + 32*B^2*a^3
*b*c*d^3 - B^2*a^4*d^4)*n^2 - 6*(6*A^2*b^4*c^2*d^2 - 6*A^2*a^2*b^2*d^4 + 15
*(B^2*b^4*c^2*d^2 - B^2*a^2*b^2*d^4)*n^2 + 4*(A*B*b^4*c^2*d^2 - 2*A*B*a*b^3
*c*d^3 + A*B*a^2*b^2*d^4)*n)*x^2 + 2*(B^2*b^4*c^4 - 8*B^2*a*b^3*c^3*d + 8*B
^2*a^3*b*c*d^3 - B^2*a^4*d^4 - 12*(B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*x^3 - 18*
(B^2*b^4*c^2*d^2 - B^2*a^2*b^2*d^4)*x^2 - 4*(B^2*b^4*c^3*d + 6*B^2*a*b^3*c^
2*d^2 - 6*B^2*a^2*b^2*c*d^3 - B^2*a^3*b*d^4)*x - 12*(B^2*b^4*d^4*x^4 + B^2*
a^2*b^2*c^2*d^2 + 2*(B^2*b^4*c*d^3 + B^2*a*b^3*d^4)*x^3 + (B^2*b^4*c^2*d^2
+ 4*B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*x^2 + 2*(B^2*a*b^3*c^2*d^2 + B^2*a^2
*b^2*c*d^3)*x)*log((b*x + a)/(d*x + c)))*log(e)^2 - 2*(12*A*B*b^4*d^4*n*x^4
 + 12*A*B*a^2*b^2*c^2*d^2*n + 12*((B^2*b^4*c*d^3 - B^2*a*b^3*d^4)*n^2 + 2*(
A*B*b^4*c*d^3 + A*B*a*b^3*d^4)*n)*x^3 - (B^2*b^4*c^4 - 8*B^2*a*b^3*c^3*d +
8*B^2*a^3*b*c*d^3 - B^2*a^4*d^4)*n^2 + 6*(3*(B^2*b^4*c^2*d^2 - B^2*a^2*b^2*
d^4)*n^2 + 2*(A*B*b^4*c^2*d^2 + 4*A*B*a*b^3*c*d^3 + A*B*a^2*b^2*d^4)*n)*x^2
 + 4*((B^2*b^4*c^3*d + 6*B^2*a*b^3*c^2*d^2 - 6*B^2*a^2*b^2*c*d^3 - B^2*a^3*
b*d^4)*n^2 + 6*(A*B*a*b^3*c^2*d^2 + A*B*a^2*b^2*c*d^3)*n)*x)*log((b*x + a)/
(d*x + c))^2 + 2*(A*B*b^4*c^4 - 16*A*B*a*b^3*c^3*d + 30*A*B*a^2*b^2*c^2*d^2
 - 16*A*B*a^3*b*c*d^3 + A*B*a^4*d^4)*n - 4*(2*A^2*b^4*c^3*d + 12*A^2*a*b^3*
c^2*d^2 - 12*A^2*a^2*b^2*c*d^3 - 2*A^2*a^3*b*d^4 + (7*B^2*b^4*c^3*d + 24*B^
2*a*b^3*c^2*d^2 - 24*B^2*a^2*b^2*c*d^3 - 7*B^2*a^3*b*d^4)*n^2 + 6*(A*B*b^4*
c^3*d - A*B*a*b^3*c^2*d^2 - A*B*a^2*b^2*c*d^3 + A*B*a^3*b*d^4)*n)*x + 2*(2*
A*B*b^4*c^4 - 16*A*B*a*b^3*c^3*d + 16*A*B*a^3*b*c*d^3 - 2*A*B*a^4*d^4 - 24*
(A*B*b^4*c*d^3 - A*B*a*b^3*d^4)*x^3 - 12*(3*A*B*b^4*c^2*d^2 - 3*A*B*a^2*b^2
*d^4 + (B^2*b^4*c^2*d^2 - 2*B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*n)*x^2 - 12*
(B^2*b^4*d^4*n*x^4 + B^2*a^2*b^2*c^2*d^2*n + 2*(B^2*b^4*c*d^3 + B^2*a*b^3*d
^4)*n*x^3 + (B^2*b^4*c^2*d^2 + 4*B^2*a*b^3*c*d^3 + B^2*a^2*b^2*d^4)*n*x^2 +
 2*(B^2*a*b^3*c^2*d^2 + B^2*a^2*b^2*c*d^3)*n*x)*log((b*x + a)/(d*x + c))^2
+ (B^2*b^4*c^4 - 16*B^2*a*b^3*c^3*d + 30*B^2*a^2*b^2*c^2*d^2 - 16*B^2*a^3*b
*c*d^3 + B^2*a^4*d^4)*n - 4*(2*A*B*b^4*c^3*d + 12*A*B*a*b^3*c^2*d^2 - 12*A*
B*a^2*b^2*c*d^3 - 2*A*B*a^3*b*d^4 + 3*(B^2*b^4*c^3*d - B^2*a*b^3*c^2*d^2 -
B^2*a^2*b^2*c*d^3 + B^2*a^3*b*d^4)*n)*x - 2*(12*A*B*b^4*d^4*x^4 + 12*A*B*a^
2*b^2*c^2*d^2 + 12*(2*A*B*b^4*c*d^3 + 2*A*B*a*b^3*d^4 + (B^2*b^4*c*d^3 - B^
2*a*b^3*d^4)*n)*x^3 + 6*(2*A*B*b^4*c^2*d^2 + 8*A*B*a*b^3*c*d^3 + 2*A*B*a^2*
b^2*d^4 + 3*(B^2*b^4*c^2*d^2 - B^2*a^2*b^2*d^4)*n)*x^2 - (B^2*b^4*c^4 - 8*B
^2*a*b^3*c^3*d + 8*B^2*a^3*b*c*d^3 - B^2*a^4*d^4)*n + 4*(6*A*B*a*b^3*c^2*d^
2 + 6*A*B*a^2*b^2*c*d^3 + (B^2*b^4*c^3*d + 6*B^2*a*b^3*c^2*d^2 - 6*B^2*a^2*
b^2*c*d^3 - B^2*a^3*b*d^4)*n)*x)*log((b*x + a)/(d*x + c)))*log(e) - 2*(12*A
^2*a^2*b^2*c^2*d^2 + 6*(5*B^2*b^4*d^4*n^2 + 2*A^2*b^4*d^4)*x^4 + 12*(2*A^2*
b^4*c*d^3 + 2*A^2*a*b^3*d^4 + 5*(B^2*b^4*c*d^3 + B^2*a*b^3*d^4)*n^2 + 2*(A*
B*b^4*c*d^3 - A*B*a*b^3*d^4)*n)*x^3 - (B^2*b^4*c^4 - 16*B^2*a*b^3*c^3*d - 1
6*B^2*a^3*b*c*d^3 + B^2*a^4*d^4)*n^2 + 6*(2*A^2*b^4*c^2*d^2 + 8*A^2*a*b^3*c
*d^3 + 2*A^2*a^2*b^2*d^4 + (7*B^2*b^4*c^2*d^2 + 16*B^2*a*b^3*c*d^3 + 7*B^2*
a^2*b^2*d^4)*n^2 + 6*(A*B*b^4*c^2*d^2 - A*B*a^2*b^2*d^4)*n)*x^2 - 2*(A*B*b^
4*c^4 - 8*A*B*a*b^3*c^3*d + 8*A*B*a^3*b*c*d^3 - A*B*a^4*d^4)*n + 4*(6*A^2*a
*b^3*c^2*d^2 + 6*A^2*a^2*b^2*c*d^3 + 3*(B^2*b^4*c^3*d + 4*B^2*a*b^3*c^2*d^2
 + 4*B^2*a^2*b^2*c*d^3 + B^2*a^3*b*d^4)*n^2 + 2*(A*B*b^4*c^3*d + 6*A*B*a*b^
3*c^2*d^2 - 6*A*B*a^2*b^2*c*d^3 - A*B*a^3*b*d^4)*n)*x)*log((b*x + a)/(d*x +
 c)))/((b^7*c^5*d^2 - 5*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 - 10*a^3*b^4*c^2
*d^5 + 5*a^4*b^3*c*d^6 - a^5*b^2*d^7)*g^3*i^3*x^4 + 2*(b^7*c^6*d - 4*a*b^6*
c^5*d^2 + 5*a^2*b^5*c^4*d^3 - 5*a^4*b^3*c^2*d^5 + 4*a^5*b^2*c*d^6 - a^6*b*d
^7)*g^3*i^3*x^3 + (b^7*c^7 - a*b^6*c^6*d - 9*a^2*b^5*c^5*d^2 + 25*a^3*b^4*c
^4*d^3 - 25*a^4*b^3*c^3*d^4 + 9*a^5*b^2*c^2*d^5 + a^6*b*c*d^6 - a^7*d^7)*g^
3*i^3*x^2 + 2*(a*b^6*c^7 - 4*a^2*b^5*c^6*d + 5*a^3*b^4*c^5*d^2 - 5*a^5*b^2*
c^3*d^4 + 4*a^6*b*c^2*d^5 - a^7*c*d^6)*g^3*i^3*x + (a^2*b^5*c^7 - 5*a^3*b^4
*c^6*d + 10*a^4*b^3*c^5*d^2 - 10*a^5*b^2*c^4*d^3 + 5*a^6*b*c^3*d^4 - a^7*c^
2*d^5)*g^3*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)^{3} \left(dix+ci\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x)
```

maxima [B] time = 5.56, size = 5594, normalized size = 7.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^3/(d*i*x+c*i)^3,x,
 algorithm="maxima")
```

```
[Out] 1/2*B^2*((12*b^3*d^3*x^3 - b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^
3 + 18*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d
^3)*x)/((b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^
5 + a^4*b^2*d^6)*g^3*i^3*x^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c
^3*d^3 + 2*a^3*b^3*c^2*d^4 - 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^
6*c^6 - 9*a^2*b^4*c^4*d^2 + 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^
6)*g^3*i^3*x^2 + 2*(a*b^5*c^6 - 3*a^2*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4
*b^2*c^3*d^3 - 3*a^5*b*c^2*d^4 + a^6*c*d^5)*g^3*i^3*x + (a^2*b^4*c^6 - 4*a^
3*b^3*c^5*d + 6*a^4*b^2*c^4*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d^4)*g^3*i^3) +
 12*b^2*d^2*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 1
0*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3) - 12*b^2*d^2*log(d*x
+ c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 +
5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)^2
 + A*B*((12*b^3*d^3*x^3 - b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^3
 + 18*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d^
3)*x)/((b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^5
 + a^4*b^2*d^6)*g^3*i^3*x^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c^
3*d^3 + 2*a^3*b^3*c^2*d^4 - 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^6
*c^6 - 9*a^2*b^4*c^4*d^2 + 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^6
)*g^3*i^3*x^2 + 2*(a*b^5*c^6 - 3*a^2*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4*
b^2*c^3*d^3 - 3*a^5*b*c^2*d^4 + a^6*c*d^5)*g^3*i^3*x + (a^2*b^4*c^6 - 4*a^3
*b^3*c^5*d + 6*a^4*b^2*c^4*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d^4)*g^3*i^3) +
12*b^2*d^2*log(b*x + a)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10
*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3) - 12*b^2*d^2*log(d*x +
 c)/((b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5
*a^4*b*c*d^4 - a^5*d^5)*g^3*i^3))*log(e*(b*x/(d*x + c) + a/(d*x + c))^n) -
1/4*((b^4*c^4 - 32*a*b^3*c^3*d + 32*a^3*b*c*d^3 - a^4*d^4 - 60*(b^4*c*d^3 -
 a*b^3*d^4)*x^3 - 8*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d
^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^
```

2 + a^2*b^2*c*d^3)*x)*log(b*x + a)^3 - 24*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)*log(d*x + c)^2 + 8*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(d*x + c)^3 - 90*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^2 - 4*(7*b^4*c^3*d + 24*a*b^3*c^2*d^2 - 24*a^2*b^2*c*d^3 - 7*a^3*b*d^4)*x - 60*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a) + 12*(5*b^4*d^4*x^4 + 5*a^2*b^2*c^2*d^2 + 10*(b^4*c*d^3 + a*b^3*d^4)*x^3 + 5*(b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)^2 + 10*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(d*x + c))*n^2/(a^2*b^5*c^7*g^3*i^3 - 5*a^3*b^4*c^6*d*g^3*i^3 + 10*a^4*b^3*c^5*d^2*g^3*i^3 - 10*a^5*b^2*c^4*d^3*g^3*i^3 + 5*a^6*b*c^3*d^4*g^3*i^3 - a^7*c^2*d^5*g^3*i^3 + (b^7*c^5*d^2*g^3*i^3 - 5*a*b^6*c^4*d^3*g^3*i^3 + 10*a^2*b^5*c^3*d^4*g^3*i^3 - 10*a^3*b^4*c^2*d^5*g^3*i^3 + 5*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^3*i^3)*x^4 + 2*(b^7*c^6*d*g^3*i^3 - 4*a*b^6*c^5*d^2*g^3*i^3 + 5*a^2*b^5*c^4*d^3*g^3*i^3 - 5*a^4*b^3*c^2*d^5*g^3*i^3 + 4*a^5*b^2*c*d^6*g^3*i^3 - a^6*b*d^7*g^3*i^3)*x^3 + (b^7*c^7*g^3*i^3 - a*b^6*c^6*d*g^3*i^3 - 9*a^2*b^5*c^5*d^2*g^3*i^3 + 25*a^3*b^4*c^4*d^3*g^3*i^3 - 25*a^4*b^3*c^3*d^4*g^3*i^3 + 9*a^5*b^2*c^2*d^5*g^3*i^3 + a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*x^2 + 2*(a*b^6*c^7*g^3*i^3 - 4*a^2*b^5*c^6*d*g^3*i^3 + 5*a^3*b^4*c^5*d^2*g^3*i^3 - 5*a^5*b^2*c^3*d^4*g^3*i^3 + 4*a^6*b*c^2*d^5*g^3*i^3 - a^7*c*d^6*g^3*i^3)*x) + 2*(b^4*c^4 - 16*a*b^3*c^3*d + 30*a^2*b^2*c^2*d^2 - 16*a^3*b*c*d^3 + a^4*d^4 - 12*(b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)^2 - 24*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)*log(d*x + c) + 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(d*x + c)^2 - 12*(b^4*c^3*d - a*b^3*c^2*d^2 - a^2*b^2*c*d^3 + a^3*b*d^4)*x)*n*log(e*(b*x/(d*x + c) + a/(d*x + c))^n)/(a^2*b^5*c^7*g^3*i^3 - 5*a^3*b^4*c^6*d*g^3*i^3 + 10*a^4*b^3*c^5*d^2*g^3*i^3 - 10*a^5*b^2*c^4*d^3*g^3*i^3 + 5*a^6*b*c^3*d^4*g^3*i^3 - a^7*c^2*d^5*g^3*i^3 + (b^7*c^5*d^2*g^3*i^3 - 5*a*b^6*c^4*d^3*g^3*i^3 + 10*a^2*b^5*c^3*d^4*g^3*i^3 - 10*a^3*b^4*c^2*d^5*g^3*i^3 + 5*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^3*i^3)*x^4 + 2*(b^7*c^6*d*g^3*i^3 - 4*a*b^6*c^5*d^2*g^3*i^3 + 5*a^2*b^5*c^4*d^3*g^3*i^3 - 5*a^4*b^3*c^2*d^5*g^3*i^3 + 4*a^5*b^2*c*d^6*g^3*i^3 - a^6*b*d^7*g^3*i^3)*x^3 + (b^7*c^7*g^3*i^3 - a*b^6*c^6*d*g^3*i^3 - 9*a^2*b^5*c^5*d^2*g^3*i^3 + 25*a^3*b^4*c^4*d^3*g^3*i^3 - 25*a^4*b^3*c^3*d^4*g^3*i^3 + 9*a^5*b^2*c^2*d^5*g^3*i^3 + a^6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*x^2 + 2*(a*b^6*c^7*g^3*i^3 - 4*a^2*b^5*c^6*d*g^3*i^3 + 5*a^3*b^4*c^5*d^2*g^3*i^3 - 5*a^5*b^2*c^3*d^4*g^3*i^3 + 4*a^6*b*c^2*d^5*g^3*i^3 - a^7*c*d^6*g^3*i^3)*x))*B^2 - 1/2*(b^4*c^4 - 16*a*b^3*c^3*d + 30*a^2*b^2*c^2*d^2 - 16*a^3*b*c*d^3 + a^4*d^4 - 12*(b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)^2 - 24*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a)*log(d*x + c) + 12*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log(d*x + c)^2 - 12*(b^4*c^3*d - a*b^3*c^2*d^2 - a^2*b^2*c*d^3 + a^3*b*d^4)*x)*A*B*n/(a^2*b^5*c^7*g^3*i^3 - 5*a^3*b^4*c^6*d*g^3*i^3 + 10*a^4*b^3*c^5*d^2*g^3*i^3 - 10*a^5*b^2*c^4*d^3*g^3*i^3 + 5*a^6*b*c^3*d^4*g^3*i^3 - a^7*c^2*d^5*g^3*i^3 + (b^7*c^5*d^2*g^3*i^3 - 5*a*b^6*c^4*d^3*g^3*i^3 + 10*a^2*b^5*c^3*d^4*g^3*i^3 - 10*a^3*b^4*c^2*d^5*g

```
^3*i^3 + 5*a^4*b^3*c*d^6*g^3*i^3 - a^5*b^2*d^7*g^3*i^3)*x^4 + 2*(b^7*c^6*d*
g^3*i^3 - 4*a*b^6*c^5*d^2*g^3*i^3 + 5*a^2*b^5*c^4*d^3*g^3*i^3 - 5*a^4*b^3*c
^2*d^5*g^3*i^3 + 4*a^5*b^2*c*d^6*g^3*i^3 - a^6*b*d^7*g^3*i^3)*x^3 + (b^7*c^
7*g^3*i^3 - a*b^6*c^6*d*g^3*i^3 - 9*a^2*b^5*c^5*d^2*g^3*i^3 + 25*a^3*b^4*c^
4*d^3*g^3*i^3 - 25*a^4*b^3*c^3*d^4*g^3*i^3 + 9*a^5*b^2*c^2*d^5*g^3*i^3 + a^
6*b*c*d^6*g^3*i^3 - a^7*d^7*g^3*i^3)*x^2 + 2*(a*b^6*c^7*g^3*i^3 - 4*a^2*b^5
*c^6*d*g^3*i^3 + 5*a^3*b^4*c^5*d^2*g^3*i^3 - 5*a^5*b^2*c^3*d^4*g^3*i^3 + 4*
a^6*b*c^2*d^5*g^3*i^3 - a^7*c*d^6*g^3*i^3)*x) + 1/2*A^2*((12*b^3*d^3*x^3 -
b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^3 + 18*(b^3*c*d^2 + a*b^2*d
^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d^3)*x)/((b^6*c^4*d^2 - 4*a*
b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b^3*c*d^5 + a^4*b^2*d^6)*g^3*i^3*x^
4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*a^2*b^4*c^3*d^3 + 2*a^3*b^3*c^2*d^4
- 3*a^4*b^2*c*d^5 + a^5*b*d^6)*g^3*i^3*x^3 + (b^6*c^6 - 9*a^2*b^4*c^4*d^2 +
 16*a^3*b^3*c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^6)*g^3*i^3*x^2 + 2*(a*b^5*c
^6 - 3*a^2*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4*b^2*c^3*d^3 - 3*a^5*b*c^2*
d^4 + a^6*c*d^5)*g^3*i^3*x + (a^2*b^4*c^6 - 4*a^3*b^3*c^5*d + 6*a^4*b^2*c^4
*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d^4)*g^3*i^3) + 12*b^2*d^2*log(b*x + a)/((
b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b
*c*d^4 - a^5*d^5)*g^3*i^3) - 12*b^2*d^2*log(d*x + c)/((b^5*c^5 - 5*a*b^4*c^
4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*g^
3*i^3))
```

mupad [B] time = 11.67, size = 2419, normalized size = 3.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^3*(c*i + d*i*x)
^3),x)
```

```
[Out] ((3*x^2*(6*A^2*a*b^2*d^3 + 6*A^2*b^3*c*d^2 + 15*B^2*a*b^2*d^3*n^2 + 15*B^2*
b^3*c*d^2*n^2 - 4*A*B*a*b^2*d^3*n + 4*A*B*b^3*c*d^2*n))/(a*d - b*c) - (2*A^
2*a^3*d^3 + 2*A^2*b^3*c^3 + B^2*a^3*d^3*n^2 + B^2*b^3*c^3*n^2 - 14*A^2*a*b^
2*c^2*d - 14*A^2*a^2*b*c*d^2 - 2*A*B*a^3*d^3*n + 2*A*B*b^3*c^3*n - 31*B^2*a
*b^2*c^2*d*n^2 - 31*B^2*a^2*b*c*d^2*n^2 - 30*A*B*a*b^2*c^2*d*n + 30*A*B*a^2
*b*c*d^2*n)/(2*(a*d - b*c)) + (2*x*(2*A^2*a^2*b*d^3 + 2*A^2*b^3*c^2*d + 14*
A^2*a*b^2*c*d^2 + 7*B^2*a^2*b*d^3*n^2 + 7*B^2*b^3*c^2*d*n^2 + 31*B^2*a*b^2*
c*d^2*n^2 - 6*A*B*a^2*b*d^3*n + 6*A*B*b^3*c^2*d*n))/(a*d - b*c) + (6*x^3*(2
*A^2*b^3*d^3 + 5*B^2*b^3*d^3*n^2))/(a*d - b*c))/(x^4*(2*a^3*b^2*d^5*g^3*i^3
 - 2*b^5*c^3*d^2*g^3*i^3 + 6*a*b^4*c^2*d^3*g^3*i^3 - 6*a^2*b^3*c*d^4*g^3*i^
3) - x*(4*a*b^4*c^5*g^3*i^3 - 4*a^5*c*d^4*g^3*i^3 - 8*a^2*b^3*c^4*d*g^3*i^3
 + 8*a^4*b*c^2*d^3*g^3*i^3) + x^3*(4*a^4*b*d^5*g^3*i^3 - 4*b^5*c^4*d*g^3*i^
3 + 8*a*b^4*c^3*d^2*g^3*i^3 - 8*a^3*b^2*c*d^4*g^3*i^3) + x^2*(2*a^5*d^5*g^3
*i^3 - 2*b^5*c^5*g^3*i^3 - 2*a*b^4*c^4*d*g^3*i^3 + 2*a^4*b*c*d^4*g^3*i^3 +
16*a^2*b^3*c^3*d^2*g^3*i^3 - 16*a^3*b^2*c^2*d^3*g^3*i^3) - 2*a^2*b^3*c^5*g^
3*i^3 + 2*a^5*c^2*d^3*g^3*i^3 + 6*a^3*b^2*c^4*d*g^3*i^3 - 6*a^4*b*c^3*d^2*g
^3*i^3) + log(e*((a + b*x)/(c + d*x))^n)^2*((x*((3*B^2*b*d*(a*d + b*c)^2)/(
a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2 - (B^2*b*d)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d
) + (6*B^2*a*b^2*c*d^2)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) - (B^2*(a*d + b*
c))/(2*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (6*B^2*b^3*d^3*x^3)/(a^2*d^2 + b^
2*c^2 - 2*a*b*c*d)^2 + (9*B^2*b^2*d^2*x^2*(a*d + b*c))/(a^2*d^2 + b^2*c^2 -
 2*a*b*c*d)^2 + (3*B^2*a*b*c*d*(a*d + b*c))/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)
^2)/(x*(2*a*b*c^2*g^3*i^3 + 2*a^2*c*d*g^3*i^3) + x^3*(2*a*b*d^2*g^3*i^3 + 2
*b^2*c*d*g^3*i^3) + x^2*(a^2*d^2*g^3*i^3 + b^2*c^2*g^3*i^3 + 4*a*b*c*d*g^3*
i^3) + a^2*c^2*g^3*i^3 + b^2*d^2*g^3*i^3*x^4) - (6*A*B*b^2*d^2)/(g^3*i^3*n*
(a*d - b*c)^5)) + (log(e*((a + b*x)/(c + d*x))^n)*(x*((6*(a*d + b*c)*(A*B*a
*b*d^2 + A*B*b^2*c*d - B^2*a*b*d^2*n + B^2*b^2*c*d*n))/(a*d - b*c) - 2*A*B*
a*b*d^2 + 2*A*B*b^2*c*d + (12*A*B*a*b^2*c*d^2)/(a*d - b*c)) + x^2*((6*b*d*(
A*B*a*b*d^2 + A*B*b^2*c*d - B^2*a*b*d^2*n + B^2*b^2*c*d*n))/(a*d - b*c) + (
12*A*B*b^2*d^2*(a*d + b*c))/(a*d - b*c)) + (6*a*c*(A*B*a*b*d^2 + A*B*b^2*c*
```

```
d - B^2*a*b*d^2*n + B^2*b^2*c*d*n))/(a*d - b*c) - A*B*a^2*d^2 + A*B*b^2*c^2
 + (B^2*a^2*d^2*n)/2 + (B^2*b^2*c^2*n)/2 + (12*A*B*b^3*d^3*x^3)/(a*d - b*c)
 - B^2*a*b*c*d*n))/(x^4*(a^3*b^2*d^5*g^3*i^3 - b^5*c^3*d^2*g^3*i^3 + 3*a*b^
4*c^2*d^3*g^3*i^3 - 3*a^2*b^3*c*d^4*g^3*i^3) - x*(2*a*b^4*c^5*g^3*i^3 - 2*a
^5*c*d^4*g^3*i^3 - 4*a^2*b^3*c^4*d*g^3*i^3 + 4*a^4*b*c^2*d^3*g^3*i^3) + x^3
*(2*a^4*b*d^5*g^3*i^3 - 2*b^5*c^4*d*g^3*i^3 + 4*a*b^4*c^3*d^2*g^3*i^3 - 4*a
^3*b^2*c*d^4*g^3*i^3) + x^2*(a^5*d^5*g^3*i^3 - b^5*c^5*g^3*i^3 - a*b^4*c^4*
d*g^3*i^3 + a^4*b*c*d^4*g^3*i^3 + 8*a^2*b^3*c^3*d^2*g^3*i^3 - 8*a^3*b^2*c^2
*d^3*g^3*i^3) - a^2*b^3*c^5*g^3*i^3 + a^5*c^2*d^3*g^3*i^3 + 3*a^3*b^2*c^4*d
*g^3*i^3 - 3*a^4*b*c^3*d^2*g^3*i^3) + (b^2*d^2*atan((b^2*d^2*((a^5*d^5*g^3*
i^3 + b^5*c^5*g^3*i^3 - 3*a*b^4*c^4*d*g^3*i^3 - 3*a^4*b*c*d^4*g^3*i^3 + 2*a
^2*b^3*c^3*d^2*g^3*i^3 + 2*a^3*b^2*c^2*d^3*g^3*i^3)/(a^4*d^4*g^3*i^3 + b^4*
c^4*g^3*i^3 - 4*a*b^3*c^3*d*g^3*i^3 - 4*a^3*b*c*d^3*g^3*i^3 + 6*a^2*b^2*c^2
*d^2*g^3*i^3) + 2*b*d*x)*(2*A^2 + 5*B^2*n^2)*(a^4*d^4*g^3*i^3 + b^4*c^4*g^3
*i^3 - 4*a*b^3*c^3*d*g^3*i^3 - 4*a^3*b*c*d^3*g^3*i^3 + 6*a^2*b^2*c^2*d^2*g^
3*i^3)*3i)/(g^3*i^3*(6*A^2*b^2*d^2 + 15*B^2*b^2*d^2*n^2)*(a*d - b*c)^5))*(2
*A^2 + 5*B^2*n^2)*6i)/(g^3*i^3*(a*d - b*c)^5) - (2*B^2*b^2*d^2*log(e*((a +
b*x)/(c + d*x))^n)^3)/(g^3*i^3*n*(a*d - b*c)^5)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**3/(d*i*x+c*i)**3
,x)
```

```
[Out] Timed out
```

3.209 $\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(ag+bgx)^4(ci+dix)^3}\,dx$

Optimal. Leaf size=908

$$-\frac{2B^2n^2(c+dx)^3b^5}{27(bc-ad)^6g^4i^3(a+bx)^3}-\frac{(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2b^5}{3(bc-ad)^6g^4i^3(a+bx)^3}-\frac{2Bn(c+dx)^3\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)b^5}{9(bc-ad)^6g^4i^3(a+bx)^3}+$$

```
[Out] -1/4*B^2*d^5*n^2*(b*x+a)^2/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2-10*A*b*B*d^4*n*(b
*x+a)/(-a*d+b*c)^6/g^4/i^3/(d*x+c)+10*b*B^2*d^4*n^2*(b*x+a)/(-a*d+b*c)^6/g^
4/i^3/(d*x+c)-20*b^3*B^2*d^2*n^2*(d*x+c)/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/4*b
^4*B^2*d*n^2*(d*x+c)^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-2/27*b^5*B^2*n^2*(d*x
+c)^3/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^3-10*b*B^2*d^4*n*(b*x+a)*ln(e*((b*x+a)/(
d*x+c))^n)/(-a*d+b*c)^6/g^4/i^3/(d*x+c)+1/2*B*d^5*n*(b*x+a)^2*(A+B*ln(e*((b
*x+a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(d*x+c)^2-20*b^3*B*d^2*n*(d*x+c)*(A
+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(b*x+a)+5/2*b^4*B*d*n*(d
*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-2/9*
b^5*B*n*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)^6/g^4/i^3/(b*x
+a)^3-1/2*d^5*(b*x+a)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^6/g^4/
i^3/(d*x+c)^2+5*b*d^4*(b*x+a)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)^
6/g^4/i^3/(d*x+c)-10*b^3*d^2*(d*x+c)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*
d+b*c)^6/g^4/i^3/(b*x+a)+5/2*b^4*d*(d*x+c)^2*(A+B*ln(e*((b*x+a)/(d*x+c))^n)
)^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^2-1/3*b^5*(d*x+c)^3*(A+B*ln(e*((b*x+a)/(d*
x+c))^n))^2/(-a*d+b*c)^6/g^4/i^3/(b*x+a)^3-10/3*b^2*d^3*(A+B*ln(e*((b*x+a)/
(d*x+c))^n))^3/B/(-a*d+b*c)^6/g^4/i^3/n
```

Rubi [C] time = 10.51, antiderivative size = 2610, normalized size of antiderivative = 2.87, number of steps used = 195, number of rules used = 31, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.689, Rules used = {2528, 2525, 12, 44, 2524, 2418, 2390, 2301, 2394, 2393, 2391, 6688, 6742, 2411, 2344, 2317, 2507, 2488, 2506, 6610, 2500, 2433, 2375, 2374, 6589, 2440, 2434, 2499, 2396, 2302, 30}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i + d*i*x)
^3),x]
```

```
[Out] (-2*b^2*B^2*n^2)/(27*(b*c - a*d)^3*g^4*i^3*(a + b*x)^3) + (37*b^2*B^2*d*n^2
)/(36*(b*c - a*d)^4*g^4*i^3*(a + b*x)^2) - (319*b^2*B^2*d^2*n^2)/(18*(b*c -
 a*d)^5*g^4*i^3*(a + b*x)) - (B^2*d^3*n^2)/(4*(b*c - a*d)^4*g^4*i^3*(c + d*
x)^2) - (19*b*B^2*d^3*n^2)/(2*(b*c - a*d)^5*g^4*i^3*(c + d*x)) - (245*b^2*B
^2*d^3*n^2*Log[a + b*x])/(9*(b*c - a*d)^6*g^4*i^3) + (10*A*b^2*B*d^3*n*Log[
a + b*x]^2)/((b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*n^2*Log[a + b*x]^2)/(
3*(b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*Log[-((b*c - a*d)/(d*(a + b*x)))
]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d
^3*Log[a + b*x]*Log[e*((a + b*x)/(c + d*x))^n]^2)/((b*c - a*d)^6*g^4*i^3) -
 (2*b^2*B*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(9*(b*c - a*d)^3*g^4*i^
3*(a + b*x)^3) + (11*b^2*B*d*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/(6*(
b*c - a*d)^4*g^4*i^3*(a + b*x)^2) - (47*b^2*B*d^2*n*(A + B*Log[e*((a + b*x)
/(c + d*x))^n]))/(3*(b*c - a*d)^5*g^4*i^3*(a + b*x)) + (B*d^3*n*(A + B*Log[
e*((a + b*x)/(c + d*x))^n]))/(2*(b*c - a*d)^4*g^4*i^3*(c + d*x)^2) + (9*b*B
*d^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)^5*g^4*i^3*(c +
d*x)) - (20*b^2*B*d^3*n*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c + d*x))^n])
)/(3*(b*c - a*d)^6*g^4*i^3) - (b^2*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2
)/(3*(b*c - a*d)^3*g^4*i^3*(a + b*x)^3) + (3*b^2*d*(A + B*Log[e*((a + b*x)/
```

```
(c + d*x))^n])^2)/(2*(b*c - a*d)^4*g^4*i^3*(a + b*x)^2) - (6*b^2*d^2*(A + B
*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^5*g^4*i^3*(a + b*x)) - (d^
3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/(2*(b*c - a*d)^4*g^4*i^3*(c + d
*x)^2) - (4*b*d^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2)/((b*c - a*d)^5*
g^4*i^3*(c + d*x)) - (10*b^2*d^3*Log[a + b*x]*(A + B*Log[e*((a + b*x)/(c +
d*x))^n])^2)/((b*c - a*d)^6*g^4*i^3) + (245*b^2*B^2*d^3*n^2*Log[c + d*x])/(
9*(b*c - a*d)^6*g^4*i^3) - (20*A*b^2*B*d^3*n*Log[-((d*(a + b*x))/(b*c - a*d
))]*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*n^2*Log[-((d*(a
 + b*x))/(b*c - a*d))]*Log[c + d*x])/(3*(b*c - a*d)^6*g^4*i^3) - (10*b^2*B^
2*d^3*Log[(a + b*x)^n]^2*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3) + (20*b^2*B*
d^3*n*(A + B*Log[e*((a + b*x)/(c + d*x))^n])*Log[c + d*x])/(3*(b*c - a*d)^6
*g^4*i^3) + (10*b^2*d^3*(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2*Log[c + d*
x])/((b*c - a*d)^6*g^4*i^3) + (10*A*b^2*B*d^3*n*Log[c + d*x]^2)/((b*c - a*d
)^6*g^4*i^3) + (10*b^2*B^2*d^3*n^2*Log[c + d*x]^2)/(3*(b*c - a*d)^6*g^4*i^3
) - (10*b^2*B^2*d^3*n^2*Log[a + b*x]*Log[c + d*x]^2)/((b*c - a*d)^6*g^4*i^3
) + (10*b^2*B^2*d^3*n*Log[e*((a + b*x)/(c + d*x))^n]*Log[c + d*x]^2)/((b*c
- a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*n^2*Log[c + d*x]^3)/(3*(b*c - a*d)^6*g^
4*i^3) - (20*A*b^2*B*d^3*n*Log[a + b*x]*Log[(b*(c + d*x))/(b*c - a*d)])/((b
*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*n^2*Log[a + b*x]*Log[(b*(c + d*x))/(
b*c - a*d)])/(3*(b*c - a*d)^6*g^4*i^3) + (10*b^2*B^2*d^3*Log[(a + b*x)^n]^2
*Log[(b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*
n*Log[a + b*x]*Log[c + d*x]*Log[(c + d*x)^(-n)])/((b*c - a*d)^6*g^4*i^3) -
(10*b^2*B^2*d^3*Log[a + b*x]*Log[(c + d*x)^(-n)]^2)/((b*c - a*d)^6*g^4*i^3)
 + (10*b^2*B^2*d^3*Log[-((d*(a + b*x))/(b*c - a*d))]*Log[(c + d*x)^(-n)]^2)
/((b*c - a*d)^6*g^4*i^3) + (20*b^2*B^2*d^3*n*Log[-((d*(a + b*x))/(b*c - a*d
))]*Log[c + d*x]*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(
c + d*x)^(-n)]))/((b*c - a*d)^6*g^4*i^3) - (20*A*b^2*B*d^3*n*PolyLog[2, -((
d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*n^2*P
olyLog[2, -((d*(a + b*x))/(b*c - a*d))])/(3*(b*c - a*d)^6*g^4*i^3) + (20*b^
2*B^2*d^3*n*Log[(a + b*x)^n]*PolyLog[2, -((d*(a + b*x))/(b*c - a*d))])/((b*
c - a*d)^6*g^4*i^3) - (20*A*b^2*B*d^3*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d
)])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*n^2*PolyLog[2, (b*(c + d*x))/
(b*c - a*d)])/(3*(b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*n*Log[(c + d*x)^(
-n)]*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^6*g^4*i^3) + (20*b
^2*B^2*d^3*n*(Log[(a + b*x)^n] - Log[e*((a + b*x)/(c + d*x))^n] + Log[(c +
d*x)^(-n)])*PolyLog[2, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^6*g^4*i^3)
- (20*b^2*B^2*d^3*n*Log[e*((a + b*x)/(c + d*x))^n]*PolyLog[2, 1 + (b*c - a*
d)/(d*(a + b*x))])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*n^2*PolyLog[3,
 -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^6*g^4*i^3) - (20*b^2*B^2*d^3*n
^2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)^6*g^4*i^3) - (20*b^2
*B^2*d^3*n^2*PolyLog[3, 1 + (b*c - a*d)/(d*(a + b*x))])/((b*c - a*d)^6*g^4*
i^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2302

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1/(
b*n), Subst[Int[x^p, x], x, a + b*Log[c*x^n]], x] /; FreeQ[{a, b, c, n, p},
 x]
```

Rule 2317

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symb
ol] :> Simp[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^p)/e, x] - Dist[(b*n*p)/e,
 Int[(Log[1 + (e*x)/d]*(a + b*Log[c*x^n])^(p - 1))/x, x], x] /; FreeQ[{a, b
, c, d, e, n}, x] && IGtQ[p, 0]
```

Rule 2344

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))),
 x_Symbol] :> Dist[1/d, Int[(a + b*Log[c*x^n])^p/x, x], x] - Dist[e/d, Int[
(a + b*Log[c*x^n])^p/(d + e*x), x], x] /; FreeQ[{a, b, c, d, e, n}, x] && I
GtQ[p, 0]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2375

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))^(r_.)]*((a_.) + Log[(c_.)*(x_)^(n_
.)]*(b_.))^(p_.))/(x_), x_Symbol] :> Simp[(Log[d*(e + f*x^m)^r]*(a + b*Log[
c*x^n])^(p + 1))/(b*n*(p + 1)), x] - Dist[(f*m*r)/(b*n*(p + 1)), Int[(x^(m
- 1)*(a + b*Log[c*x^n])^(p + 1))/(e + f*x^m), x], x] /; FreeQ[{a, b, c, d,
e, f, r, m, n}, x] && IGtQ[p, 0] && NeQ[d*e, 1]
```

Rule 2390

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_))^(q_.), x_Symbol] :> Dist[1/e, Subst[Int[((f*x)/d)^q*(a + b*Log[c*x^
n])^p, x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e, f, g, n, p, q}, x] && E
qQ[e*f - d*g, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2393

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))]*(b_.))/((f_.) + (g_.)*(x_)), x_
Symbol] :> Dist[1/g, Subst[Int[(a + b*Log[1 + (c*e*x)/g])/x, x], x, f + g*x
], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && EqQ[g + c*
(e*f - d*g), 0]
```

Rule 2394

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))/((f_.) + (g_.)*(x_
)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d + e*x
)^n]))/g, x] - Dist[(b*e*n)/g, Int[Log[(e*(f + g*x))/(e*f - d*g)]/(d + e*x)
, x], x] /; FreeQ[{a, b, c, d, e, f, g, n}, x] && NeQ[e*f - d*g, 0]
```

Rule 2396

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_)/((f_.) + (g_.
)*(x_)), x_Symbol] :> Simp[(Log[(e*(f + g*x))/(e*f - d*g)]*(a + b*Log[c*(d
+ e*x)^n])^p)/g, x] - Dist[(b*e*n*p)/g, Int[(Log[(e*(f + g*x))/(e*f - d*g)]
*(a + b*Log[c*(d + e*x)^n])^(p - 1))/(d + e*x), x], x] /; FreeQ[{a, b, c, d
, e, f, g, n, p}, x] && NeQ[e*f - d*g, 0] && IGtQ[p, 1]
```

Rule 2411

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + (g_
.)*(x_))^(q_.)*((h_.) + (i_.)*(x_))^(r_.), x_Symbol] :> Dist[1/e, Subst[Int
[((g*x)/e)^q*((e*h - d*i)/e + (i*x)/e)^r*(a + b*Log[c*x^n])^p, x], x, d + e
*x], x] /; FreeQ[{a, b, c, d, e, f, g, h, i, n, p, q, r}, x] && EqQ[e*f - d
*g, 0] && (IGtQ[p, 0] || IGtQ[r, 0]) && IntegerQ[2*r]
```

Rule 2418

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*(RFx_), x_Sy
mbol] :> With[{u = ExpandIntegrand[(a + b*Log[c*(d + e*x)^n])^p, RFx, x]},
Int[u, x] /; SumQ[u]] /; FreeQ[{a, b, c, d, e, n}, x] && RationalFunctionQ[
RFx, x] && IntegerQ[p]
```

Rule 2433

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_.) + Log
[(h_.)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_.) + (l_.)*(x_))^(r_.), x_Sym
bol] :> Dist[1/e, Subst[Int[((k*x)/d)^r*(a + b*Log[c*x^n])^p*(f + g*Log[h*(
(e*i - d*j)/e + (j*x)/e)^m]), x], x, d + e*x], x] /; FreeQ[{a, b, c, d, e,
f, g, h, i, j, k, l, n, p, r}, x] && EqQ[e*k - d*l, 0]
```

Rule 2434

```
Int[(((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.
)*((i_.) + (j_.)*(x_))^(m_.)]*(g_.)))/(x_), x_Symbol] :> Simp[Log[x]*(a + b
*Log[c*(d + e*x)^n])*(f + g*Log[h*(i + j*x)^m]), x] + (-Dist[e*g*m, Int[(Lo
g[x]*(a + b*Log[c*(d + e*x)^n]))/(d + e*x), x], x] - Dist[b*j*n, Int[(Log[x
]*(f + g*Log[h*(i + j*x)^m]))/(i + j*x), x], x]) /; FreeQ[{a, b, c, d, e, f
, g, h, i, j, m, n}, x] && EqQ[e*i - d*j, 0]
```

Rule 2440

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))*((f_.) + Log[(h_.)
*((i_.) + (j_.)*(x_))^(m_.)]*(g_.))*((k_) + (l_.)*(x_))^(r_.), x_Symbol] :>
 Dist[1/l, Subst[Int[x^r*(a + b*Log[c*(-((e*k - d*l)/l) + (e*x)/l)^n])*(f +
 g*Log[h*(-((j*k - i*l)/l) + (j*x)/l)^m]), x], x, k + l*x], x] /; FreeQ[{a,
 b, c, d, e, f, g, h, i, j, k, l, m, n}, x] && IntegerQ[r]
```

Rule 2488

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)/((g_.) + (h_.)*(x_)), x_Symbol] :> -Simp[(Log[-((b*c - a*d)/(
d*(a + b*x)))]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/h, x] + Dist[(p*r*s*
```

```
(b*c - a*d))/h, Int[(Log[-((b*c - a*d)/(d*(a + b*x)))]*Log[e*(f*(a + b*x)^p
*(c + d*x)^q)^r]^(s - 1))/((a + b*x)*(c + d*x)), x], x] /; FreeQ[{a, b, c,
d, e, f, g, h, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ
[b*g - a*h, 0] && IGtQ[s, 0]
```

Rule 2499

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.))^(m_.))/((j_.
) + (k_.)*(x_)), x_Symbol] :> Simp[((s + t*Log[i*(g + h*x)^n])^(m + 1)*Log[
e*(f*(a + b*x)^p*(c + d*x)^q)^r])/(k*n*t*(m + 1)), x] + (-Dist[(b*p*r)/(k*n
*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(a + b*x), x], x] - Dis
t[(d*q*r)/(k*n*t*(m + 1)), Int[(s + t*Log[i*(g + h*x)^n])^(m + 1)/(c + d*x)
, x], x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, m, n, p, q, r},
x] && NeQ[b*c - a*d, 0] && EqQ[h*j - g*k, 0] && IGtQ[m, 0]
```

Rule 2500

```
Int[(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.)
)^(r_.)]*((s_.) + Log[(i_.)*((g_.) + (h_.)*(x_))^(n_.)]*(t_.)))/((j_.) + (k
_.)*(x_)), x_Symbol] :> Dist[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r] - Log[(a
+ b*x)^(p*r)] - Log[(c + d*x)^(q*r)], Int[(s + t*Log[i*(g + h*x)^n])/(j + k
*x), x], x] + (Int[(Log[(a + b*x)^(p*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k
*x), x] + Int[(Log[(c + d*x)^(q*r)]*(s + t*Log[i*(g + h*x)^n]))/(j + k*x),
x]) /; FreeQ[{a, b, c, d, e, f, g, h, i, j, k, s, t, n, p, q, r}, x] && NeQ
[b*c - a*d, 0]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2507

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*Log[(i_.)*((j_.)*((g_.) + (h_.)*(x_))^(t_.))^(u_.)]*(v_), x_S
ymbol] :> With[{k = Simplify[v*(a + b*x)*(c + d*x)]}, Simp[(k*Log[i*(j*(g +
 h*x)^t)^u]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c
 - a*d)), x] - Dist[(k*h*t*u)/(p*r*(s + 1)*(b*c - a*d)), Int[Log[e*(f*(a +
b*x)^p*(c + d*x)^q)^r]^(s + 1)/(g + h*x), x], x] /; FreeQ[k, x]] /; FreeQ[{
a, b, c, d, e, f, g, h, i, j, p, q, r, s, t, u}, x] && NeQ[b*c - a*d, 0] &&
 EqQ[p + q, 0] && NeQ[s, -1]
```

Rule 2524

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[(Log[d + e*x]*(a + b*Log[c*RFx^p])^n)/e, x] - Dist[(b*n*p)/e
, Int[(Log[d + e*x]*(a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x] /;
FreeQ[{a, b, c, d, e, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2525

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*((d_.) + (e_.)*(x_))^(m_.
), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(a + b*Log[c*RFx^p])^n)/(e*(m + 1))
```

```
, x] - Dist[(b*n*p)/(e*(m + 1)), Int[SimplifyIntegrand[((d + e*x)^(m + 1)*(
a + b*Log[c*RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && RationalFunctionQ[RFx, x] && IGtQ[n, 0] && (EqQ[n, 1] ||
IntegerQ[m]) && NeQ[m, -1]
```

Rule 2528

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.)*(RGx_), x_Symbol] :> With
[{u = ExpandIntegrand[(a + b*Log[c*RFx^p])^n, RGx, x]}, Int[u, x] /; SumQ[u
]] /; FreeQ[{a, b, c, p}, x] && RationalFunctionQ[RFx, x] && RationalFuncti
onQ[RGx, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}{(209c+209dx)^3(ag+bgx)^4}\,dx = -\frac{2b^2B^2n^2}{246491883(bc-ad)^3g^4(a+bx)^3}+\frac{37b^2B^2dn^2}{328655844(bc-ad)^4g^4(a+bx)^2}-\frac{14}{}$$

Mathematica [B] time = 4.25, size = 2138, normalized size = 2.35

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[e*((a + b*x)/(c + d*x))^n])^2/((a*g + b*g*x)^4*(c*i +
d*i*x)^3),x]
```

```
[Out] -1/108*(360*b^2*B^2*d^3*n^2*(a + b*x)^3*(c + d*x)^2*Log[(a + b*x)/(c + d*x)
]^3 + 18*B*n*Log[(a + b*x)/(c + d*x)]^2*(60*a^3*A*b^2*c^2*d^3 + 2*b^5*B*c^5
*n - 15*a*b^4*B*c^4*d*n + 60*a^2*b^3*B*c^3*d^2*n - 30*a^4*b*B*c*d^4*n + 3*a
^5*B*d^5*n + 180*a^2*A*b^3*c^2*d^3*x + 120*a^3*A*b^2*c*d^4*x - 5*b^5*B*c^4*
d*n*x + 60*a*b^4*B*c^3*d^2*n*x + 180*a^2*b^3*B*c^2*d^3*n*x - 120*a^3*b^2*B*
c*d^4*n*x - 15*a^4*b*B*d^5*n*x + 180*a*A*b^4*c^2*d^3*x^2 + 360*a^2*A*b^3*c*
d^4*x^2 + 60*a^3*A*b^2*d^5*x^2 + 20*b^5*B*c^3*d^2*n*x^2 + 270*a*b^4*B*c^2*d
^3*n*x^2 - 90*a^3*b^2*B*d^5*n*x^2 + 60*A*b^5*c^2*d^3*x^3 + 360*a*A*b^4*c*d^
4*x^3 + 180*a^2*A*b^3*d^5*x^3 + 110*b^5*B*c^2*d^3*n*x^3 + 180*a*b^4*B*c*d^4
```

```
*n*x^3 - 90*a^2*b^3*B*d^5*n*x^3 + 120*A*b^5*c*d^4*x^4 + 180*a*A*b^4*d^5*x^4
 + 100*b^5*B*c*d^4*n*x^4 + 60*A*b^5*d^5*x^5 + 20*b^5*B*d^5*n*x^5 + 60*b^2*B
*d^3*(a + b*x)^3*(c + d*x)^2*Log[e*((a + b*x)/(c + d*x))^n] - 60*b^2*B*d^3*
n*(a + b*x)^3*(c + d*x)^2*Log[(a + b*x)/(c + d*x)]) + 6*b^2*d^2*(b*c - a*d)
*(a + b*x)^2*(c + d*x)^2*(108*A^2 + 282*A*B*n + 319*B^2*n^2 + 108*B^2*Log[e
*((a + b*x)/(c + d*x))^n]^2 - 6*B*n*(36*A + 47*B*n)*Log[(a + b*x)/(c + d*x)
] + 108*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x)
)^n]*(36*A + 47*B*n - 36*B*n*Log[(a + b*x)/(c + d*x)])) - 3*b^2*d*(b*c - a*
d)^2*(a + b*x)*(c + d*x)^2*(54*A^2 + 66*A*B*n + 37*B^2*n^2 + 54*B^2*Log[e*(
(a + b*x)/(c + d*x))^n]^2 - 6*B*n*(18*A + 11*B*n)*Log[(a + b*x)/(c + d*x)]
+ 54*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n
]*(18*A + 11*B*n - 18*B*n*Log[(a + b*x)/(c + d*x)])) + 4*b^2*(b*c - a*d)^3*
(c + d*x)^2*(9*A^2 + 6*A*B*n + 2*B^2*n^2 + 9*B^2*Log[e*((a + b*x)/(c + d*x)
)^n]^2 - 6*B*n*(3*A + B*n)*Log[(a + b*x)/(c + d*x)] + 9*B^2*n^2*Log[(a + b*
x)/(c + d*x)]^2 + 6*B*Log[e*((a + b*x)/(c + d*x))^n]*(3*A + B*n - 3*B*n*Log
[(a + b*x)/(c + d*x)])) + 60*b^2*d^3*(a + b*x)^3*(c + d*x)^2*Log[a + b*x]*(
18*A^2 + 12*A*B*n + 49*B^2*n^2 + 18*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 -
12*B*n*(3*A + B*n)*Log[(a + b*x)/(c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c +
 d*x)]^2 + 12*B*Log[e*((a + b*x)/(c + d*x))^n]*(3*A + B*n - 3*B*n*Log[(a +
b*x)/(c + d*x)])) + 27*d^3*(b*c - a*d)^2*(a + b*x)^3*(2*A^2 - 2*A*B*n + B^2
*n^2 + 2*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-2*A + B*n)*Log[(a +
 b*x)/(c + d*x)] + 2*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b
*x)/(c + d*x))^n]*(-2*A + B*n + 2*B*n*Log[(a + b*x)/(c + d*x)])) + 54*b*d^3
*(b*c - a*d)*(a + b*x)^3*(c + d*x)*(8*A^2 - 18*A*B*n + 19*B^2*n^2 + 8*B^2*L
og[e*((a + b*x)/(c + d*x))^n]^2 + 2*B*n*(-8*A + 9*B*n)*Log[(a + b*x)/(c + d
*x)] + 8*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 - 2*B*Log[e*((a + b*x)/(c + d*x
))^n]*(-8*A + 9*B*n + 8*B*n*Log[(a + b*x)/(c + d*x)])) + 6*B*(b*c - a*d)*n*
Log[(a + b*x)/(c + d*x)]*(18*b*d^3*(a + b*x)^3*(c + d*x)*(8*A - 9*B*n + 8*B
*Log[e*((a + b*x)/(c + d*x))^n] - 8*B*n*Log[(a + b*x)/(c + d*x)]) + 4*b^2*(
b*c - a*d)^2*(c + d*x)^2*(3*A + B*n + 3*B*Log[e*((a + b*x)/(c + d*x))^n] -
3*B*n*Log[(a + b*x)/(c + d*x)]) + 9*d^3*(b*c - a*d)*(a + b*x)^3*(2*A - B*n
+ 2*B*Log[e*((a + b*x)/(c + d*x))^n] - 2*B*n*Log[(a + b*x)/(c + d*x)]) - 3*
b^2*d*(b*c - a*d)*(a + b*x)*(c + d*x)^2*(18*A + 11*B*n + 18*B*(Log[e*((a +
b*x)/(c + d*x))^n] - n*Log[(a + b*x)/(c + d*x)])) + 6*b^2*d^2*(a + b*x)^2*(
c + d*x)^2*(36*A + 47*B*n + 36*B*(Log[e*((a + b*x)/(c + d*x))^n] - n*Log[(a
 + b*x)/(c + d*x)]))) - 60*b^2*d^3*(a + b*x)^3*(c + d*x)^2*(18*A^2 + 12*A*B
*n + 49*B^2*n^2 + 18*B^2*Log[e*((a + b*x)/(c + d*x))^n]^2 - 12*B*n*(3*A + B
*n)*Log[(a + b*x)/(c + d*x)] + 18*B^2*n^2*Log[(a + b*x)/(c + d*x)]^2 + 12*B
*Log[e*((a + b*x)/(c + d*x))^n]*(3*A + B*n - 3*B*n*Log[(a + b*x)/(c + d*x)]
))*Log[c + d*x])/((b*c - a*d)^6*g^4*i^3*(a + b*x)^3*(c + d*x)^2)
```

fricas [B] time = 1.22, size = 4725, normalized size = 5.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x,
 algorithm="fricas")
```

```
[Out] -1/108*(36*A^2*b^5*c^5 - 270*A^2*a*b^4*c^4*d + 1080*A^2*a^2*b^3*c^3*d^2 - 3
60*A^2*a^3*b^2*c^2*d^3 - 540*A^2*a^4*b*c*d^4 + 54*A^2*a^5*d^5 + 60*(18*A^2*
b^5*c*d^4 - 18*A^2*a*b^4*d^5 + 49*(B^2*b^5*c*d^4 - B^2*a*b^4*d^5)*n^2 + 12*
(A*B*b^5*c*d^4 - A*B*a*b^4*d^5)*n)*x^4 + 30*(54*A^2*b^5*c^2*d^3 + 36*A^2*a*
b^4*c*d^4 - 90*A^2*a^2*b^3*d^5 + (159*B^2*b^5*c^2*d^3 + 74*B^2*a*b^4*c*d^4
- 233*B^2*a^2*b^3*d^5)*n^2 + 24*(3*A*B*b^5*c^2*d^3 - 2*A*B*a*b^4*c*d^4 - A*
B*a^2*b^3*d^5)*n)*x^3 + 360*(B^2*b^5*d^5*n^2*x^5 + B^2*a^3*b^2*c^2*d^3*n^2
+ (2*B^2*b^5*c*d^4 + 3*B^2*a*b^4*d^5)*n^2*x^4 + (B^2*b^5*c^2*d^3 + 6*B^2*a*
b^4*c*d^4 + 3*B^2*a^2*b^3*d^5)*n^2*x^3 + (3*B^2*a*b^4*c^2*d^3 + 6*B^2*a^2*b
^3*c*d^4 + B^2*a^3*b^2*d^5)*n^2*x^2 + (3*B^2*a^2*b^3*c^2*d^3 + 2*B^2*a^3*b^
2*c*d^4)*n^2*x)*log((b*x + a)/(d*x + c))^3 + (8*B^2*b^5*c^5 - 135*B^2*a*b^4
```

*c^4*d + 2160*B^2*a^2*b^3*c^3*d^2 - 980*B^2*a^3*b^2*c^2*d^3 - 1080*B^2*a^4*
b*c*d^4 + 27*B^2*a^5*d^5)*n^2 + 10*(36*A^2*b^5*c^3*d^2 + 378*A^2*a*b^4*c^2*
d^3 - 216*A^2*a^2*b^3*c*d^4 - 198*A^2*a^3*b^2*d^5 + (170*B^2*b^5*c^3*d^2 +
921*B^2*a*b^4*c^2*d^3 - 588*B^2*a^2*b^3*c*d^4 - 503*B^2*a^3*b^2*d^5)*n^2 +
12*(11*A*B*b^5*c^3*d^2 + 21*A*B*a*b^4*c^2*d^3 - 39*A*B*a^2*b^3*c*d^4 + 7*A*
B*a^3*b^2*d^5)*n)*x^2 + 18*(2*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 60*B^2*a^2
*b^3*c^3*d^2 - 20*B^2*a^3*b^2*c^2*d^3 - 30*B^2*a^4*b*c*d^4 + 3*B^2*a^5*d^5
+ 60*(B^2*b^5*c*d^4 - B^2*a*b^4*d^5)*x^4 + 30*(3*B^2*b^5*c^2*d^3 + 2*B^2*a*
b^4*c*d^4 - 5*B^2*a^2*b^3*d^5)*x^3 + 10*(2*B^2*b^5*c^3*d^2 + 21*B^2*a*b^4*c
^2*d^3 - 12*B^2*a^2*b^3*c*d^4 - 11*B^2*a^3*b^2*d^5)*x^2 - 5*(B^2*b^5*c^4*d
- 12*B^2*a*b^4*c^3*d^2 - 24*B^2*a^2*b^3*c^2*d^3 + 32*B^2*a^3*b^2*c*d^4 + 3*
B^2*a^4*b*d^5)*x + 60*(B^2*b^5*d^5*x^5 + B^2*a^3*b^2*c^2*d^3 + (2*B^2*b^5*c
*d^4 + 3*B^2*a*b^4*d^5)*x^4 + (B^2*b^5*c^2*d^3 + 6*B^2*a*b^4*c*d^4 + 3*B^2*
a^2*b^3*d^5)*x^3 + (3*B^2*a*b^4*c^2*d^3 + 6*B^2*a^2*b^3*c*d^4 + B^2*a^3*b^2
*d^5)*x^2 + (3*B^2*a^2*b^3*c^2*d^3 + 2*B^2*a^3*b^2*c*d^4)*x)*log((b*x + a)/
(d*x + c)))*log(e)^2 + 18*(60*A*B*a^3*b^2*c^2*d^3*n + 20*(B^2*b^5*d^5*n^2 +
3*A*B*b^5*d^5*n)*x^5 + 20*(5*B^2*b^5*c*d^4*n^2 + 3*(2*A*B*b^5*c*d^4 + 3*A*
B*a*b^4*d^5)*n)*x^4 + 10*((11*B^2*b^5*c^2*d^3 + 18*B^2*a*b^4*c*d^4 - 9*B^2*
a^2*b^3*d^5)*n^2 + 6*(A*B*b^5*c^2*d^3 + 6*A*B*a*b^4*c*d^4 + 3*A*B*a^2*b^3*d
^5)*n)*x^3 + (2*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 60*B^2*a^2*b^3*c^3*d^2 -
30*B^2*a^4*b*c*d^4 + 3*B^2*a^5*d^5)*n^2 + 10*((2*B^2*b^5*c^3*d^2 + 27*B^2*
a*b^4*c^2*d^3 - 9*B^2*a^3*b^2*d^5)*n^2 + 6*(3*A*B*a*b^4*c^2*d^3 + 6*A*B*a^2
*b^3*c*d^4 + A*B*a^3*b^2*d^5)*n)*x^2 - 5*((B^2*b^5*c^4*d - 12*B^2*a*b^4*c^3
*d^2 - 36*B^2*a^2*b^3*c^2*d^3 + 24*B^2*a^3*b^2*c*d^4 + 3*B^2*a^4*b*d^5)*n^2
- 12*(3*A*B*a^2*b^3*c^2*d^3 + 2*A*B*a^3*b^2*c*d^4)*n)*x)*log((b*x + a)/(d*
x + c))^2 + 6*(4*A*B*b^5*c^5 - 45*A*B*a*b^4*c^4*d + 360*A*B*a^2*b^3*c^3*d^2
- 490*A*B*a^3*b^2*c^2*d^3 + 180*A*B*a^4*b*c*d^4 - 9*A*B*a^5*d^5)*n - 5*(18
*A^2*b^5*c^4*d - 216*A^2*a*b^4*c^3*d^2 - 432*A^2*a^2*b^3*c^2*d^3 + 576*A^2*
a^3*b^2*c*d^4 + 54*A^2*a^4*b*d^5 + (19*B^2*b^5*c^4*d - 756*B^2*a*b^4*c^3*d^
2 - 708*B^2*a^2*b^3*c^2*d^3 + 1256*B^2*a^3*b^2*c*d^4 + 189*B^2*a^4*b*d^5)*n
^2 + 6*(5*A*B*b^5*c^4*d - 108*A*B*a*b^4*c^3*d^2 + 78*A*B*a^2*b^3*c^2*d^3 +
52*A*B*a^3*b^2*c*d^4 - 27*A*B*a^4*b*d^5)*n)*x + 6*(12*A*B*b^5*c^5 - 90*A*B*
a*b^4*c^4*d + 360*A*B*a^2*b^3*c^3*d^2 - 120*A*B*a^3*b^2*c^2*d^3 - 180*A*B*a
^4*b*c*d^4 + 18*A*B*a^5*d^5 + 120*(3*A*B*b^5*c*d^4 - 3*A*B*a*b^4*d^5 + (B^2
*b^5*c*d^4 - B^2*a*b^4*d^5)*n)*x^4 + 60*(9*A*B*b^5*c^2*d^3 + 6*A*B*a*b^4*c*
d^4 - 15*A*B*a^2*b^3*d^5 + 2*(3*B^2*b^5*c^2*d^3 - 2*B^2*a*b^4*c*d^4 - B^2*a
^2*b^3*d^5)*n)*x^3 + 20*(6*A*B*b^5*c^3*d^2 + 63*A*B*a*b^4*c^2*d^3 - 36*A*B*
a^2*b^3*c*d^4 - 33*A*B*a^3*b^2*d^5 + (11*B^2*b^5*c^3*d^2 + 21*B^2*a*b^4*c^2
*d^3 - 39*B^2*a^2*b^3*c*d^4 + 7*B^2*a^3*b^2*d^5)*n)*x^2 + 180*(B^2*b^5*d^5*
n*x^5 + B^2*a^3*b^2*c^2*d^3*n + (2*B^2*b^5*c*d^4 + 3*B^2*a*b^4*d^5)*n*x^4 +
(B^2*b^5*c^2*d^3 + 6*B^2*a*b^4*c*d^4 + 3*B^2*a^2*b^3*d^5)*n*x^3 + (3*B^2*a
*b^4*c^2*d^3 + 6*B^2*a^2*b^3*c*d^4 + B^2*a^3*b^2*d^5)*n*x^2 + (3*B^2*a^2*b^
3*c^2*d^3 + 2*B^2*a^3*b^2*c*d^4)*n*x)*log((b*x + a)/(d*x + c))^2 + (4*B^2*b
^5*c^5 - 45*B^2*a*b^4*c^4*d + 360*B^2*a^2*b^3*c^3*d^2 - 490*B^2*a^3*b^2*c^2
*d^3 + 180*B^2*a^4*b*c*d^4 - 9*B^2*a^5*d^5)*n - 5*(6*A*B*b^5*c^4*d - 72*A*B
*a*b^4*c^3*d^2 - 144*A*B*a^2*b^3*c^2*d^3 + 192*A*B*a^3*b^2*c*d^4 + 18*A*B*a
^4*b*d^5 + (5*B^2*b^5*c^4*d - 108*B^2*a*b^4*c^3*d^2 + 78*B^2*a^2*b^3*c^2*d^
3 + 52*B^2*a^3*b^2*c*d^4 - 27*B^2*a^4*b*d^5)*n)*x + 6*(60*A*B*a^3*b^2*c^2*d
^3 + 20*(B^2*b^5*d^5*n + 3*A*B*b^5*d^5)*x^5 + 20*(5*B^2*b^5*c*d^4*n + 6*A*B
*b^5*c*d^4 + 9*A*B*a*b^4*d^5)*x^4 + 10*(6*A*B*b^5*c^2*d^3 + 36*A*B*a*b^4*c*
d^4 + 18*A*B*a^2*b^3*d^5 + (11*B^2*b^5*c^2*d^3 + 18*B^2*a*b^4*c*d^4 - 9*B^2
*a^2*b^3*d^5)*n)*x^3 + 10*(18*A*B*a*b^4*c^2*d^3 + 36*A*B*a^2*b^3*c*d^4 + 6*
A*B*a^3*b^2*d^5 + (2*B^2*b^5*c^3*d^2 + 27*B^2*a*b^4*c^2*d^3 - 9*B^2*a^3*b^2
*d^5)*n)*x^2 + (2*B^2*b^5*c^5 - 15*B^2*a*b^4*c^4*d + 60*B^2*a^2*b^3*c^3*d^2
- 30*B^2*a^4*b*c*d^4 + 3*B^2*a^5*d^5)*n + 5*(36*A*B*a^2*b^3*c^2*d^3 + 24*A
*B*a^3*b^2*c*d^4 - (B^2*b^5*c^4*d - 12*B^2*a*b^4*c^3*d^2 - 36*B^2*a^2*b^3*c
^2*d^3 + 24*B^2*a^3*b^2*c*d^4 + 3*B^2*a^4*b*d^5)*n)*x)*log((b*x + a)/(d*x +
c)))*log(e) + 6*(180*A^2*a^3*b^2*c^2*d^3 + 10*(49*B^2*b^5*d^5*n^2 + 12*A*B
*b^5*d^5*n + 18*A^2*b^5*d^5)*x^5 + 10*(60*A*B*b^5*c*d^4*n + 36*A^2*b^5*c*d^

```
4 + 54*A^2*a*b^4*d^5 + 5*(22*B^2*b^5*c*d^4 + 27*B^2*a*b^4*d^5)*n^2)*x^4 + 1
0*(18*A^2*b^5*c^2*d^3 + 108*A^2*a*b^4*c*d^4 + 54*A^2*a^2*b^3*d^5 + 5*(17*B^
2*b^5*c^2*d^3 + 54*B^2*a*b^4*c*d^4 + 27*B^2*a^2*b^3*d^5)*n^2 + 6*(11*A*B*b^
5*c^2*d^3 + 18*A*B*a*b^4*c*d^4 - 9*A*B*a^2*b^3*d^5)*n)*x^3 + (4*B^2*b^5*c^5
 - 45*B^2*a*b^4*c^4*d + 360*B^2*a^2*b^3*c^3*d^2 + 180*B^2*a^4*b*c*d^4 - 9*B
^2*a^5*d^5)*n^2 + 10*(54*A^2*a*b^4*c^2*d^3 + 108*A^2*a^2*b^3*c*d^4 + 18*A^2
*a^3*b^2*d^5 + (22*B^2*b^5*c^3*d^2 + 189*B^2*a*b^4*c^2*d^3 + 216*B^2*a^2*b^
3*c*d^4 + 63*B^2*a^3*b^2*d^5)*n^2 + 6*(2*A*B*b^5*c^3*d^2 + 27*A*B*a*b^4*c^2
*d^3 - 9*A*B*a^3*b^2*d^5)*n)*x^2 + 6*(2*A*B*b^5*c^5 - 15*A*B*a*b^4*c^4*d +
60*A*B*a^2*b^3*c^3*d^2 - 30*A*B*a^4*b*c*d^4 + 3*A*B*a^5*d^5)*n + 5*(108*A^2
*a^2*b^3*c^2*d^3 + 72*A^2*a^3*b^2*c*d^4 - (5*B^2*b^5*c^4*d - 108*B^2*a*b^4*
c^3*d^2 - 216*B^2*a^2*b^3*c^2*d^3 - 144*B^2*a^3*b^2*c*d^4 - 27*B^2*a^4*b*d^
5)*n^2 - 6*(A*B*b^5*c^4*d - 12*A*B*a*b^4*c^3*d^2 - 36*A*B*a^2*b^3*c^2*d^3 +
 24*A*B*a^3*b^2*c*d^4 + 3*A*B*a^4*b*d^5)*n)*x)*log((b*x + a)/(d*x + c)))/((
b^9*c^6*d^2 - 6*a*b^8*c^5*d^3 + 15*a^2*b^7*c^4*d^4 - 20*a^3*b^6*c^3*d^5 + 1
5*a^4*b^5*c^2*d^6 - 6*a^5*b^4*c*d^7 + a^6*b^3*d^8)*g^4*i^3*x^5 + (2*b^9*c^7
*d - 9*a*b^8*c^6*d^2 + 12*a^2*b^7*c^5*d^3 + 5*a^3*b^6*c^4*d^4 - 30*a^4*b^5*
c^3*d^5 + 33*a^5*b^4*c^2*d^6 - 16*a^6*b^3*c*d^7 + 3*a^7*b^2*d^8)*g^4*i^3*x^
4 + (b^9*c^8 - 18*a^2*b^7*c^6*d^2 + 52*a^3*b^6*c^5*d^3 - 60*a^4*b^5*c^4*d^4
 + 24*a^5*b^4*c^3*d^5 + 10*a^6*b^3*c^2*d^6 - 12*a^7*b^2*c*d^7 + 3*a^8*b*d^8
)*g^4*i^3*x^3 + (3*a*b^8*c^8 - 12*a^2*b^7*c^7*d + 10*a^3*b^6*c^6*d^2 + 24*a
^4*b^5*c^5*d^3 - 60*a^5*b^4*c^4*d^4 + 52*a^6*b^3*c^3*d^5 - 18*a^7*b^2*c^2*d
^6 + a^9*d^8)*g^4*i^3*x^2 + (3*a^2*b^7*c^8 - 16*a^3*b^6*c^7*d + 33*a^4*b^5*
c^6*d^2 - 30*a^5*b^4*c^5*d^3 + 5*a^6*b^3*c^4*d^4 + 12*a^7*b^2*c^3*d^5 - 9*a
^8*b*c^2*d^6 + 2*a^9*c*d^7)*g^4*i^3*x + (a^3*b^6*c^8 - 6*a^4*b^5*c^7*d + 15
*a^5*b^4*c^6*d^2 - 20*a^6*b^3*c^5*d^3 + 15*a^7*b^2*c^4*d^4 - 6*a^8*b*c^3*d^
5 + a^9*c^2*d^6)*g^4*i^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x,
 algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}{\left(bgx+ag\right)^{4}\left(dix+ci\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)
```

```
[Out] int((B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x)
```

maxima [B] time = 11.58, size = 9293, normalized size = 10.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*((b*x+a)/(d*x+c))^n))^2/(b*g*x+a*g)^4/(d*i*x+c*i)^3,x,
 algorithm="maxima")
```

```
[Out] -1/6*B^2*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2*c^2*d^2
 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3 + 10*(2*
```

```
b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d - 11*a*b^
3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2 - 5*a*b^7*c^4*
d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d
^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a
^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*g^4
*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3
 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*d^7)*g^
4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a^4*b^4*c
^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^8*d^7)*g
^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2 - 10*a^
5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*g^4*i^3*
x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^
3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*x + a)/((b^6
*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2
*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x + c)/((b^
6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^
2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))*log(e*(b*x/(d*x + c) + a/(d*
x + c))^n)^2 - 1/3*A*B*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a
^2*b^2*c^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4
)*x^3 + 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c
^3*d - 11*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2
- 5*a*b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d
^6 - a^5*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*
c^4*d^3 + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^
6*b^2*d^7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a
^3*b^5*c^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3
*a^7*b*d^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2
+ 25*a^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^
6 - a^8*d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c
^5*d^2 - 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c
*d^6)*g^4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*
a^6*b^2*c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(
b*x + a)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^
3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log
(d*x + c)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d
^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))*log(e*(b*x/(d*
x + c) + a/(d*x + c))^n) - 1/108*((8*b^5*c^5 - 135*a*b^4*c^4*d + 2160*a^2*b
^3*c^3*d^2 - 980*a^3*b^2*c^2*d^3 - 1080*a^4*b*c*d^4 + 27*a^5*d^5 + 2940*(b^
5*c*d^4 - a*b^4*d^5)*x^4 + 30*(159*b^5*c^2*d^3 + 74*a*b^4*c*d^4 - 233*a^2*b
^3*d^5)*x^3 + 360*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d
^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*
d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c
*d^4)*x)*log(b*x + a)^3 - 360*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4
 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (
3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 +
 2*a^3*b^2*c*d^4)*x)*log(d*x + c)^3 + 10*(170*b^5*c^3*d^2 + 921*a*b^4*c^2*d
^3 - 588*a^2*b^3*c*d^4 - 503*a^3*b^2*d^5)*x^2 - 360*(b^5*d^5*x^5 + a^3*b^2*
c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 +
3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2
+ (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a)^2 - 360*(b^5*d^5*x^
5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*
b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b
^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x - 3*(b^5*d^5*x^5 + a^
3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*
d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5
)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a))*log(d*x + c)
^2 - 5*(19*b^5*c^4*d - 756*a*b^4*c^3*d^2 - 708*a^2*b^3*c^2*d^3 + 1256*a^3*b
^2*c*d^4 + 189*a^4*b*d^5)*x + 2940*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*
c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^
```

```
3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*
d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a) - 60*(49*b^5*d^5*x^5 + 49*a^3*b^2*c^
2*d^3 + 49*(2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + 49*(b^5*c^2*d^3 + 6*a*b^4*c*d^
4 + 3*a^2*b^3*d^5)*x^3 + 49*(3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^
5)*x^2 + 18*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^
4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 +
6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*
x)*log(b*x + a)^2 + 49*(3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x - 12*(b^5*d^
5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 +
6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a
^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a))*lo
g(d*x + c))*n^2/(a^3*b^6*c^8*g^4*i^3 - 6*a^4*b^5*c^7*d*g^4*i^3 + 15*a^5*b^4
*c^6*d^2*g^4*i^3 - 20*a^6*b^3*c^5*d^3*g^4*i^3 + 15*a^7*b^2*c^4*d^4*g^4*i^3
- 6*a^8*b*c^3*d^5*g^4*i^3 + a^9*c^2*d^6*g^4*i^3 + (b^9*c^6*d^2*g^4*i^3 - 6*
a*b^8*c^5*d^3*g^4*i^3 + 15*a^2*b^7*c^4*d^4*g^4*i^3 - 20*a^3*b^6*c^3*d^5*g^4
*i^3 + 15*a^4*b^5*c^2*d^6*g^4*i^3 - 6*a^5*b^4*c*d^7*g^4*i^3 + a^6*b^3*d^8*g
^4*i^3)*x^5 + (2*b^9*c^7*d*g^4*i^3 - 9*a*b^8*c^6*d^2*g^4*i^3 + 12*a^2*b^7*c
^5*d^3*g^4*i^3 + 5*a^3*b^6*c^4*d^4*g^4*i^3 - 30*a^4*b^5*c^3*d^5*g^4*i^3 + 3
3*a^5*b^4*c^2*d^6*g^4*i^3 - 16*a^6*b^3*c*d^7*g^4*i^3 + 3*a^7*b^2*d^8*g^4*i^
3)*x^4 + (b^9*c^8*g^4*i^3 - 18*a^2*b^7*c^6*d^2*g^4*i^3 + 52*a^3*b^6*c^5*d^3
*g^4*i^3 - 60*a^4*b^5*c^4*d^4*g^4*i^3 + 24*a^5*b^4*c^3*d^5*g^4*i^3 + 10*a^6
*b^3*c^2*d^6*g^4*i^3 - 12*a^7*b^2*c*d^7*g^4*i^3 + 3*a^8*b*d^8*g^4*i^3)*x^3
+ (3*a*b^8*c^8*g^4*i^3 - 12*a^2*b^7*c^7*d*g^4*i^3 + 10*a^3*b^6*c^6*d^2*g^4*
i^3 + 24*a^4*b^5*c^5*d^3*g^4*i^3 - 60*a^5*b^4*c^4*d^4*g^4*i^3 + 52*a^6*b^3*
c^3*d^5*g^4*i^3 - 18*a^7*b^2*c^2*d^6*g^4*i^3 + a^9*d^8*g^4*i^3)*x^2 + (3*a^
2*b^7*c^8*g^4*i^3 - 16*a^3*b^6*c^7*d*g^4*i^3 + 33*a^4*b^5*c^6*d^2*g^4*i^3 -
 30*a^5*b^4*c^5*d^3*g^4*i^3 + 5*a^6*b^3*c^4*d^4*g^4*i^3 + 12*a^7*b^2*c^3*d^
5*g^4*i^3 - 9*a^8*b*c^2*d^6*g^4*i^3 + 2*a^9*c*d^7*g^4*i^3)*x) + 6*(4*b^5*c^
5 - 45*a*b^4*c^4*d + 360*a^2*b^3*c^3*d^2 - 490*a^3*b^2*c^2*d^3 + 180*a^4*b*
c*d^4 - 9*a^5*d^5 + 120*(b^5*c*d^4 - a*b^4*d^5)*x^4 + 120*(3*b^5*c^2*d^3 -
2*a*b^4*c*d^4 - a^2*b^3*d^5)*x^3 + 20*(11*b^5*c^3*d^2 + 21*a*b^4*c^2*d^3 -
39*a^2*b^3*c*d^4 + 7*a^3*b^2*d^5)*x^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3
+ (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^
3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2
*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a)^2 - 180*(b^5*d^5*x^5 + a^3*
b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^
4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*
x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(d*x + c)^2 - 5*(5*b^5*c^
4*d - 108*a*b^4*c^3*d^2 + 78*a^2*b^3*c^2*d^3 + 52*a^3*b^2*c*d^4 - 27*a^4*b*
d^5)*x + 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x
^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 +
 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)
*x)*log(b*x + a) - 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*
b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4
*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*
b^2*c*d^4)*x - 3*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^
5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d
^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*
d^4)*x)*log(b*x + a))*log(d*x + c))*n*log(e*(b*x/(d*x + c) + a/(d*x + c))^n
)/(a^3*b^6*c^8*g^4*i^3 - 6*a^4*b^5*c^7*d*g^4*i^3 + 15*a^5*b^4*c^6*d^2*g^4*i
^3 - 20*a^6*b^3*c^5*d^3*g^4*i^3 + 15*a^7*b^2*c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*
d^5*g^4*i^3 + a^9*c^2*d^6*g^4*i^3 + (b^9*c^6*d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*
g^4*i^3 + 15*a^2*b^7*c^4*d^4*g^4*i^3 - 20*a^3*b^6*c^3*d^5*g^4*i^3 + 15*a^4*
b^5*c^2*d^6*g^4*i^3 - 6*a^5*b^4*c*d^7*g^4*i^3 + a^6*b^3*d^8*g^4*i^3)*x^5 +
(2*b^9*c^7*d*g^4*i^3 - 9*a*b^8*c^6*d^2*g^4*i^3 + 12*a^2*b^7*c^5*d^3*g^4*i^3
 + 5*a^3*b^6*c^4*d^4*g^4*i^3 - 30*a^4*b^5*c^3*d^5*g^4*i^3 + 33*a^5*b^4*c^2*
d^6*g^4*i^3 - 16*a^6*b^3*c*d^7*g^4*i^3 + 3*a^7*b^2*d^8*g^4*i^3)*x^4 + (b^9*
c^8*g^4*i^3 - 18*a^2*b^7*c^6*d^2*g^4*i^3 + 52*a^3*b^6*c^5*d^3*g^4*i^3 - 60*
a^4*b^5*c^4*d^4*g^4*i^3 + 24*a^5*b^4*c^3*d^5*g^4*i^3 + 10*a^6*b^3*c^2*d^6*g
```

^4*i^3 - 12*a^7*b^2*c*d^7*g^4*i^3 + 3*a^8*b*d^8*g^4*i^3)*x^3 + (3*a*b^8*c^8
*g^4*i^3 - 12*a^2*b^7*c^7*d*g^4*i^3 + 10*a^3*b^6*c^6*d^2*g^4*i^3 + 24*a^4*b
^5*c^5*d^3*g^4*i^3 - 60*a^5*b^4*c^4*d^4*g^4*i^3 + 52*a^6*b^3*c^3*d^5*g^4*i^
3 - 18*a^7*b^2*c^2*d^6*g^4*i^3 + a^9*d^8*g^4*i^3)*x^2 + (3*a^2*b^7*c^8*g^4*
i^3 - 16*a^3*b^6*c^7*d*g^4*i^3 + 33*a^4*b^5*c^6*d^2*g^4*i^3 - 30*a^5*b^4*c^
5*d^3*g^4*i^3 + 5*a^6*b^3*c^4*d^4*g^4*i^3 + 12*a^7*b^2*c^3*d^5*g^4*i^3 - 9*
a^8*b*c^2*d^6*g^4*i^3 + 2*a^9*c*d^7*g^4*i^3)*x))*B^2 - 1/18*(4*b^5*c^5 - 45
*a*b^4*c^4*d + 360*a^2*b^3*c^3*d^2 - 490*a^3*b^2*c^2*d^3 + 180*a^4*b*c*d^4
- 9*a^5*d^5 + 120*(b^5*c*d^4 - a*b^4*d^5)*x^4 + 120*(3*b^5*c^2*d^3 - 2*a*b^
4*c*d^4 - a^2*b^3*d^5)*x^3 + 20*(11*b^5*c^3*d^2 + 21*a*b^4*c^2*d^3 - 39*a^2
*b^3*c*d^4 + 7*a^3*b^2*d^5)*x^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b
^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)
*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c
^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(b*x + a)^2 - 180*(b^5*d^5*x^5 + a^3*b^2*c^
2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*
a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 +
(3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*log(d*x + c)^2 - 5*(5*b^5*c^4*d -
108*a*b^4*c^3*d^2 + 78*a^2*b^3*c^2*d^3 + 52*a^3*b^2*c*d^4 - 27*a^4*b*d^5)*x
 + 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4 + (
b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6*a^2
*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x)*lo
g(b*x + a) - 120*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^
5)*x^4 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d
^3 + 6*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*
d^4)*x - 3*(b^5*d^5*x^5 + a^3*b^2*c^2*d^3 + (2*b^5*c*d^4 + 3*a*b^4*d^5)*x^4
 + (b^5*c^2*d^3 + 6*a*b^4*c*d^4 + 3*a^2*b^3*d^5)*x^3 + (3*a*b^4*c^2*d^3 + 6
*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 + (3*a^2*b^3*c^2*d^3 + 2*a^3*b^2*c*d^4)*x
)*log(b*x + a))*log(d*x + c))*A*B*n/(a^3*b^6*c^8*g^4*i^3 - 6*a^4*b^5*c^7*d*
g^4*i^3 + 15*a^5*b^4*c^6*d^2*g^4*i^3 - 20*a^6*b^3*c^5*d^3*g^4*i^3 + 15*a^7*
b^2*c^4*d^4*g^4*i^3 - 6*a^8*b*c^3*d^5*g^4*i^3 + a^9*c^2*d^6*g^4*i^3 + (b^9*
c^6*d^2*g^4*i^3 - 6*a*b^8*c^5*d^3*g^4*i^3 + 15*a^2*b^7*c^4*d^4*g^4*i^3 - 20
*a^3*b^6*c^3*d^5*g^4*i^3 + 15*a^4*b^5*c^2*d^6*g^4*i^3 - 6*a^5*b^4*c*d^7*g^4
*i^3 + a^6*b^3*d^8*g^4*i^3)*x^5 + (2*b^9*c^7*d*g^4*i^3 - 9*a*b^8*c^6*d^2*g^
4*i^3 + 12*a^2*b^7*c^5*d^3*g^4*i^3 + 5*a^3*b^6*c^4*d^4*g^4*i^3 - 30*a^4*b^5
*c^3*d^5*g^4*i^3 + 33*a^5*b^4*c^2*d^6*g^4*i^3 - 16*a^6*b^3*c*d^7*g^4*i^3 +
3*a^7*b^2*d^8*g^4*i^3)*x^4 + (b^9*c^8*g^4*i^3 - 18*a^2*b^7*c^6*d^2*g^4*i^3
+ 52*a^3*b^6*c^5*d^3*g^4*i^3 - 60*a^4*b^5*c^4*d^4*g^4*i^3 + 24*a^5*b^4*c^3*
d^5*g^4*i^3 + 10*a^6*b^3*c^2*d^6*g^4*i^3 - 12*a^7*b^2*c*d^7*g^4*i^3 + 3*a^8
*b*d^8*g^4*i^3)*x^3 + (3*a*b^8*c^8*g^4*i^3 - 12*a^2*b^7*c^7*d*g^4*i^3 + 10*
a^3*b^6*c^6*d^2*g^4*i^3 + 24*a^4*b^5*c^5*d^3*g^4*i^3 - 60*a^5*b^4*c^4*d^4*g
^4*i^3 + 52*a^6*b^3*c^3*d^5*g^4*i^3 - 18*a^7*b^2*c^2*d^6*g^4*i^3 + a^9*d^8*
g^4*i^3)*x^2 + (3*a^2*b^7*c^8*g^4*i^3 - 16*a^3*b^6*c^7*d*g^4*i^3 + 33*a^4*b
^5*c^6*d^2*g^4*i^3 - 30*a^5*b^4*c^5*d^3*g^4*i^3 + 5*a^6*b^3*c^4*d^4*g^4*i^3
 + 12*a^7*b^2*c^3*d^5*g^4*i^3 - 9*a^8*b*c^2*d^6*g^4*i^3 + 2*a^9*c*d^7*g^4*i
^3)*x) - 1/6*A^2*((60*b^4*d^4*x^4 + 2*b^4*c^4 - 13*a*b^3*c^3*d + 47*a^2*b^2
*c^2*d^2 + 27*a^3*b*c*d^3 - 3*a^4*d^4 + 30*(3*b^4*c*d^3 + 5*a*b^3*d^4)*x^3
+ 10*(2*b^4*c^2*d^2 + 23*a*b^3*c*d^3 + 11*a^2*b^2*d^4)*x^2 - 5*(b^4*c^3*d -
 11*a*b^3*c^2*d^2 - 35*a^2*b^2*c*d^3 - 3*a^3*b*d^4)*x)/((b^8*c^5*d^2 - 5*a*
b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 - 10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a
^5*b^3*d^7)*g^4*i^3*x^5 + (2*b^8*c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^
3 + 10*a^3*b^5*c^3*d^4 - 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*
d^7)*g^4*i^3*x^4 + (b^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5
*c^4*d^3 - 25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b
*d^7)*g^4*i^3*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*a
^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b*c*d^6 - a^
8*d^7)*g^4*i^3*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^4*b^4*c^5*d^2
 - 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*c^2*d^5 - 2*a^8*c*d^6)*
g^4*i^3*x + (a^3*b^5*c^7 - 5*a^4*b^4*c^6*d + 10*a^5*b^3*c^5*d^2 - 10*a^6*b^
2*c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8*c^2*d^5)*g^4*i^3) + 60*b^2*d^3*log(b*x +

```
a)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15
*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3) - 60*b^2*d^3*log(d*x +
 c)/((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 1
5*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*g^4*i^3))
```

mupad [B] time = 13.70, size = 4649, normalized size = 5.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log(e*((a + b*x)/(c + d*x))^n))^2/((a*g + b*g*x)^4*(c*i + d*i*x)
^3),x)
```

```
[Out] log(e*((a + b*x)/(c + d*x))^n)*((x*((a*d + b*c)*(20*A*B*a*b*d^2 + 10*A*B*b^
2*c*d - (70*B^2*a*b*d^2*n)/3 + (10*B^2*b^2*c*d*n)/3) + a*c*(30*A*B*b^2*d^2
- 20*B^2*b^2*d^2*n) + (5*B^2*a^2*b*d^3*n)/6 + (5*B^2*b^3*c^2*d*n)/6 - 5*A*B
*a^2*b*d^3 - 5*A*B*b^3*c^2*d + 10*A*B*a*b^2*c*d^2 - (5*B^2*a*b^2*c*d^2*n)/3
) + x^2*((a*d + b*c)*(30*A*B*b^2*d^2 - 20*B^2*b^2*d^2*n) + b*d*(20*A*B*a*b*
d^2 + 10*A*B*b^2*c*d - (70*B^2*a*b*d^2*n)/3 + (10*B^2*b^2*c*d*n)/3)) + a*c*
(20*A*B*a*b*d^2 + 10*A*B*b^2*c*d - (70*B^2*a*b*d^2*n)/3 + (10*B^2*b^2*c*d*n
)/3) - 3*A*B*a^3*d^3 - 2*A*B*b^3*c^3 + b*d*x^3*(30*A*B*b^2*d^2 - 20*B^2*b^2
*d^2*n) + (3*B^2*a^3*d^3*n)/2 - (2*B^2*b^3*c^3*n)/3 + A*B*a*b^2*c^2*d + 4*A
*B*a^2*b*c*d^2 + (17*B^2*a*b^2*c^2*d*n)/6 - (11*B^2*a^2*b*c*d^2*n)/3)/(x^5*
(3*a^4*b^3*d^6*g^4*i^3 + 3*b^7*c^4*d^2*g^4*i^3 - 12*a*b^6*c^3*d^3*g^4*i^3 -
 12*a^3*b^4*c*d^5*g^4*i^3 + 18*a^2*b^5*c^2*d^4*g^4*i^3) + x*(9*a^2*b^5*c^6*
g^4*i^3 + 6*a^7*c*d^5*g^4*i^3 - 30*a^3*b^4*c^5*d*g^4*i^3 - 15*a^6*b*c^2*d^4
*g^4*i^3 + 30*a^4*b^3*c^4*d^2*g^4*i^3) + x^2*(3*a^7*d^6*g^4*i^3 + 9*a*b^6*c
^6*g^4*i^3 + 6*a^6*b*c*d^5*g^4*i^3 - 18*a^2*b^5*c^5*d*g^4*i^3 - 15*a^3*b^4*
c^4*d^2*g^4*i^3 + 60*a^4*b^3*c^3*d^3*g^4*i^3 - 45*a^5*b^2*c^2*d^4*g^4*i^3)
+ x^3*(3*b^7*c^6*g^4*i^3 + 9*a^6*b*d^6*g^4*i^3 + 6*a*b^6*c^5*d*g^4*i^3 - 18
*a^5*b^2*c*d^5*g^4*i^3 - 45*a^2*b^5*c^4*d^2*g^4*i^3 + 60*a^3*b^4*c^3*d^3*g^
4*i^3 - 15*a^4*b^3*c^2*d^4*g^4*i^3) + x^4*(9*a^5*b^2*d^6*g^4*i^3 + 6*b^7*c^
5*d*g^4*i^3 - 15*a*b^6*c^4*d^2*g^4*i^3 - 30*a^4*b^3*c*d^5*g^4*i^3 + 30*a^3*
b^4*c^2*d^4*g^4*i^3) + 3*a^3*b^4*c^6*g^4*i^3 + 3*a^7*c^2*d^4*g^4*i^3 - 12*a
^4*b^3*c^5*d*g^4*i^3 - 12*a^6*b*c^3*d^3*g^4*i^3 + 18*a^5*b^2*c^4*d^2*g^4*i^
3) + (20*B*b^2*d^3*(3*A + B*n)*(x^2*((3*g^4*i^3*n*(a*d + b*c)^2*(a*d - b*c)
^5)/d + 6*a*b*c*g^4*i^3*n*(a*d - b*c)^5) + 6*b*g^4*i^3*n*x^3*(a*d + b*c)*(a
*d - b*c)^5 + 3*b^2*d*g^4*i^3*n*x^4*(a*d - b*c)^5 + (3*a^2*c^2*g^4*i^3*n*(a
*d - b*c)^5)/d + (6*a*c*g^4*i^3*n*x*(a*d + b*c)*(a*d - b*c)^5)/d))/(3*g^4*i
^3*n*(a*d - b*c)^6*(x^5*(3*a^4*b^3*d^6*g^4*i^3 + 3*b^7*c^4*d^2*g^4*i^3 - 12
*a*b^6*c^3*d^3*g^4*i^3 - 12*a^3*b^4*c*d^5*g^4*i^3 + 18*a^2*b^5*c^2*d^4*g^4*
i^3) + x*(9*a^2*b^5*c^6*g^4*i^3 + 6*a^7*c*d^5*g^4*i^3 - 30*a^3*b^4*c^5*d*g^
4*i^3 - 15*a^6*b*c^2*d^4*g^4*i^3 + 30*a^4*b^3*c^4*d^2*g^4*i^3) + x^2*(3*a^7
*d^6*g^4*i^3 + 9*a*b^6*c^6*g^4*i^3 + 6*a^6*b*c*d^5*g^4*i^3 - 18*a^2*b^5*c^5
*d*g^4*i^3 - 15*a^3*b^4*c^4*d^2*g^4*i^3 + 60*a^4*b^3*c^3*d^3*g^4*i^3 - 45*a
^5*b^2*c^2*d^4*g^4*i^3) + x^3*(3*b^7*c^6*g^4*i^3 + 9*a^6*b*d^6*g^4*i^3 + 6*
a*b^6*c^5*d*g^4*i^3 - 18*a^5*b^2*c*d^5*g^4*i^3 - 45*a^2*b^5*c^4*d^2*g^4*i^3
 + 60*a^3*b^4*c^3*d^3*g^4*i^3 - 15*a^4*b^3*c^2*d^4*g^4*i^3) + x^4*(9*a^5*b^
2*d^6*g^4*i^3 + 6*b^7*c^5*d*g^4*i^3 - 15*a*b^6*c^4*d^2*g^4*i^3 - 30*a^4*b^3
*c*d^5*g^4*i^3 + 30*a^3*b^4*c^2*d^4*g^4*i^3) + 3*a^3*b^4*c^6*g^4*i^3 + 3*a^
7*c^2*d^4*g^4*i^3 - 12*a^4*b^3*c^5*d*g^4*i^3 - 12*a^6*b*c^3*d^3*g^4*i^3 + 1
8*a^5*b^2*c^4*d^2*g^4*i^3))) + log(e*((a + b*x)/(c + d*x))^n)^2*((x*((5*B^2
*(2*a*b*d^2 + b^2*c*d)*(a*d + b*c))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) -
 (5*B^2*b*d)/(6*(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)) + (5*B^2*a*b^2*c*d^2)/(a^2
*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + x^2*((5*B^2*b*d*(2*a*b*d^2 + b^2*c*d))/(3*
(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2) + (5*B^2*b^2*d^2*(a*d + b*c))/(a^2*d^2 +
 b^2*c^2 - 2*a*b*c*d)^2) - (B^2*(3*a*d + 2*b*c))/(6*(a^2*d^2 + b^2*c^2 - 2*
a*b*c*d)) + (5*B^2*a*c*(2*a*b*d^2 + b^2*c*d))/(3*(a^2*d^2 + b^2*c^2 - 2*a*b
*c*d)^2) + (5*B^2*b^3*d^3*x^3)/(a^2*d^2 + b^2*c^2 - 2*a*b*c*d)^2)/(x*(2*a^3
*c*d*g^4*i^3 + 3*a^2*b*c^2*g^4*i^3) + x^2*(a^3*d^2*g^4*i^3 + 3*a*b^2*c^2*g^
```

```
4*i^3 + 6*a^2*b*c*d*g^4*i^3) + x^3*(b^3*c^2*g^4*i^3 + 3*a^2*b*d^2*g^4*i^3 +
 6*a*b^2*c*d*g^4*i^3) + x^4*(2*b^3*c*d*g^4*i^3 + 3*a*b^2*d^2*g^4*i^3) + a^3
*c^2*g^4*i^3 + b^3*d^2*g^4*i^3*x^5) - (10*B*b^2*d^3*(3*A + B*n))/(3*g^4*i^3
*n*(a*d - b*c)^6) + (10*B^2*b^2*d^3*(x^2*((g^4*i^3*n*(a*d + b*c)^2*(a*d - b
*c))/d + 2*a*b*c*g^4*i^3*n*(a*d - b*c)) + b^2*d*g^4*i^3*n*x^4*(a*d - b*c) +
 (a^2*c^2*g^4*i^3*n*(a*d - b*c))/d + 2*b*g^4*i^3*n*x^3*(a*d + b*c)*(a*d - b
*c) + (2*a*c*g^4*i^3*n*x*(a*d + b*c)*(a*d - b*c))/d))/(g^4*i^3*n*(a*d - b*c
)^6*(x*(2*a^3*c*d*g^4*i^3 + 3*a^2*b*c^2*g^4*i^3) + x^2*(a^3*d^2*g^4*i^3 + 3
*a*b^2*c^2*g^4*i^3 + 6*a^2*b*c*d*g^4*i^3) + x^3*(b^3*c^2*g^4*i^3 + 3*a^2*b*
d^2*g^4*i^3 + 6*a*b^2*c*d*g^4*i^3) + x^4*(2*b^3*c*d*g^4*i^3 + 3*a*b^2*d^2*g
^4*i^3) + a^3*c^2*g^4*i^3 + b^3*d^2*g^4*i^3*x^5))) + ((36*A^2*b^4*c^4 - 54*
A^2*a^4*d^4 - 27*B^2*a^4*d^4*n^2 + 8*B^2*b^4*c^4*n^2 + 846*A^2*a^2*b^2*c^2*
d^2 - 234*A^2*a*b^3*c^3*d + 486*A^2*a^3*b*c*d^3 + 54*A*B*a^4*d^4*n + 24*A*B
*b^4*c^4*n - 127*B^2*a*b^3*c^3*d*n^2 + 1053*B^2*a^3*b*c*d^3*n^2 + 2033*B^2*
a^2*b^2*c^2*d^2*n^2 + 1914*A*B*a^2*b^2*c^2*d^2*n - 246*A*B*a*b^3*c^3*d*n -
1026*A*B*a^3*b*c*d^3*n)/(6*(a*d - b*c)) + (5*x*(54*A^2*a^3*b*d^4 - 18*A^2*b
^4*c^3*d + 198*A^2*a*b^3*c^2*d^2 + 630*A^2*a^2*b^2*c*d^3 + 189*B^2*a^3*b*d^
4*n^2 - 19*B^2*b^4*c^3*d*n^2 - 162*A*B*a^3*b*d^4*n - 30*A*B*b^4*c^3*d*n + 7
37*B^2*a*b^3*c^2*d^2*n^2 + 1445*B^2*a^2*b^2*c*d^3*n^2 + 618*A*B*a*b^3*c^2*d
^2*n + 150*A*B*a^2*b^2*c*d^3*n))/(6*(a*d - b*c)) + (5*x^3*(90*A^2*a*b^3*d^4
 + 54*A^2*b^4*c*d^3 + 233*B^2*a*b^3*d^4*n^2 + 159*B^2*b^4*c*d^3*n^2 + 24*A*
B*a*b^3*d^4*n + 72*A*B*b^4*c*d^3*n))/(a*d - b*c) + (10*x^4*(18*A^2*b^4*d^4
+ 49*B^2*b^4*d^4*n^2 + 12*A*B*b^4*d^4*n))/(a*d - b*c) + (5*x^2*(198*A^2*a^2
*b^2*d^4 + 36*A^2*b^4*c^2*d^2 + 503*B^2*a^2*b^2*d^4*n^2 + 170*B^2*b^4*c^2*d
^2*n^2 + 414*A^2*a*b^3*c*d^3 + 1091*B^2*a*b^3*c*d^3*n^2 - 84*A*B*a^2*b^2*d^
4*n + 132*A*B*b^4*c^2*d^2*n + 384*A*B*a*b^3*c*d^3*n))/(3*(a*d - b*c)))/(x^5
*(18*a^4*b^3*d^6*g^4*i^3 + 18*b^7*c^4*d^2*g^4*i^3 - 72*a*b^6*c^3*d^3*g^4*i^
3 - 72*a^3*b^4*c*d^5*g^4*i^3 + 108*a^2*b^5*c^2*d^4*g^4*i^3) + x*(54*a^2*b^5
*c^6*g^4*i^3 + 36*a^7*c*d^5*g^4*i^3 - 180*a^3*b^4*c^5*d*g^4*i^3 - 90*a^6*b*
c^2*d^4*g^4*i^3 + 180*a^4*b^3*c^4*d^2*g^4*i^3) + x^2*(18*a^7*d^6*g^4*i^3 +
54*a*b^6*c^6*g^4*i^3 + 36*a^6*b*c*d^5*g^4*i^3 - 108*a^2*b^5*c^5*d*g^4*i^3 -
 90*a^3*b^4*c^4*d^2*g^4*i^3 + 360*a^4*b^3*c^3*d^3*g^4*i^3 - 270*a^5*b^2*c^2
*d^4*g^4*i^3) + x^3*(18*b^7*c^6*g^4*i^3 + 54*a^6*b*d^6*g^4*i^3 + 36*a*b^6*c
^5*d*g^4*i^3 - 108*a^5*b^2*c*d^5*g^4*i^3 - 270*a^2*b^5*c^4*d^2*g^4*i^3 + 36
0*a^3*b^4*c^3*d^3*g^4*i^3 - 90*a^4*b^3*c^2*d^4*g^4*i^3) + x^4*(54*a^5*b^2*d
^6*g^4*i^3 + 36*b^7*c^5*d*g^4*i^3 - 90*a*b^6*c^4*d^2*g^4*i^3 - 180*a^4*b^3*
c*d^5*g^4*i^3 + 180*a^3*b^4*c^2*d^4*g^4*i^3) + 18*a^3*b^4*c^6*g^4*i^3 + 18*
a^7*c^2*d^4*g^4*i^3 - 72*a^4*b^3*c^5*d*g^4*i^3 - 72*a^6*b*c^3*d^3*g^4*i^3 +
 108*a^5*b^2*c^4*d^2*g^4*i^3) + (b^2*d^3*atan((b^2*d^3*(18*A^2 + 49*B^2*n^2
 + 12*A*B*n)*(9*a^6*d^6*g^4*i^3 - 9*b^6*c^6*g^4*i^3 + 36*a*b^5*c^5*d*g^4*i^
3 - 36*a^5*b*c*d^5*g^4*i^3 - 45*a^2*b^4*c^4*d^2*g^4*i^3 + 45*a^4*b^2*c^2*d^
4*g^4*i^3)*5i)/(9*g^4*i^3*(a*d - b*c)^6*(90*A^2*b^2*d^3 + 245*B^2*b^2*d^3*n
^2 + 60*A*B*b^2*d^3*n)) + (b^3*d^4*x*(18*A^2 + 49*B^2*n^2 + 12*A*B*n)*(a^5*
d^5*g^4*i^3 - b^5*c^5*g^4*i^3 + 5*a*b^4*c^4*d*g^4*i^3 - 5*a^4*b*c*d^4*g^4*i
^3 - 10*a^2*b^3*c^3*d^2*g^4*i^3 + 10*a^3*b^2*c^2*d^3*g^4*i^3)*10i)/(g^4*i^3
*(a*d - b*c)^6*(90*A^2*b^2*d^3 + 245*B^2*b^2*d^3*n^2 + 60*A*B*b^2*d^3*n)))*
(18*A^2 + 49*B^2*n^2 + 12*A*B*n)*10i)/(9*g^4*i^3*(a*d - b*c)^6) - (10*B^2*b
^2*d^3*log(e*((a + b*x)/(c + d*x))^n)^3)/(3*g^4*i^3*n*(a*d - b*c)^6)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*((b*x+a)/(d*x+c))**n))**2/(b*g*x+a*g)**4/(d*i*x+c*i)**3
,x)

[Out] Timed out
```

3.210 $\int (ag+bgx)^m(ci+dix)^{-2-m}\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^p\,dx$

Optimal. Leaf size=189

$$\frac{(a+bx)e^{-\frac{A(m+1)}{Bn}}(g(a+bx))^m(i(c+dx))^{-m}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-\frac{m+1}{n}}\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^p\left(-\frac{(m+1)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{Bn}\right)^{-}}{i^2(m+1)(c+dx)(bc-ad)}$$

```
[Out] (b*x+a)*(g*(b*x+a))^m*GAMMA(1+p,-(1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/B/n)
*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^p/(-a*d+b*c)/exp(A*(1+m)/B/n)/i^2/(1+m)/((
e*((b*x+a)/(d*x+c))^n)^((1+m)/n))/(d*x+c)/((i*(d*x+c))^m)/((-(1+m)*(A+B*ln(
e*((b*x+a)/(d*x+c))^n))/B/n)^p)
```

Rubi [F] time = 0.98, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.000$, Rules used = {}

$$\int (ag+bgx)^m(ci+dix)^{-2-m}\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^p\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x
))^n])^p,x]
```

```
[Out] Defer[Int][(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(
c + d*x))^n])^p, x]
```

Rubi steps

$$\int (210c+210dx)^{-2-m}(ag+bgx)^m\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^p\,dx=\int (210c+210dx)^{-2-m}(ag+bgx)^m\left(A+B\right.$$

Mathematica [F] time = 0.55, size = 0, normalized size = 0.00

$$\int (ag+bgx)^m(ci+dix)^{-2-m}\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^p\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])^p,x]
```

```
[Out] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])^p, x]
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(bgx+ag\right)^m(dix+ci)^{-m-2}\left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^p,x, algorithm="fricas")
```

```
[Out] integral((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)*(B*log(e*((b*x + a)/(d*x +
c))^n) + A)^p, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{m}(dix+ci)^{-m-2}\left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^p,x, algorithm="giac")
```

```
[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)*(B*log(e*((b*x + a)/(d*x +
 c))^n) + A)^p, x)
```

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{p}\left(bgx+ag\right)^{m}(dix+ci)^{-m-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^p,x)
```

```
[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{m}(dix+ci)^{-m-2}\left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^p,x, algorithm="maxima")
```

```
[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)*(B*log(e*((b*x + a)/(d*x +
 c))^n) + A)^p, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a\,g+b\,g\,x\right)^{m}\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^{n}\right)\right)^{p}}{\left(c\,i+d\,i\,x\right)^{m+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^p)/(c*i + d*i*x
)^(m + 2),x)
```

```
[Out] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^p)/(c*i + d*i*x
)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)*(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**p,x)
```

```
[Out] Timed out
```

3.211 $\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^p dx$

Optimal. Leaf size=190

$$-\frac{(a+bx)e^{\frac{A(m+1)}{Bn}}(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{m+1}{n}}\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^p\left(\frac{(m+1)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{Bn}\right.}{i^2(m+1)(c+dx)(bc-ad)}$$

```
[Out] -exp(A*(1+m)/B/n)*(b*x+a)*(g*(b*x+a))^(-2-m)*(e*((b*x+a)/(d*x+c))^n)^((1+m)
/n)*(i*(d*x+c))^(2+m)*GAMMA(1+p,(1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/B/n)*
(A+B*ln(e*((b*x+a)/(d*x+c))^n))^p/(-a*d+b*c)/i^2/(1+m)/(d*x+c)/(((1+m)*(A+B
*ln(e*((b*x+a)/(d*x+c))^n))/B/n)^p)
```

Rubi [F] time = 0.88, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (ag+bgx)^{-2-m}(ci+dix)^m\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^p dx$$

Verification is Not applicable to the result.

```
[In] Int[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c + d*x
))^n])^p,x]
```

```
[Out] Defer[Int][(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(
c + d*x))^n])^p, x]
```

Rubi steps

$$\int (211c+211dx)^m(ag+bgx)^{-2-m}\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^p dx=\int (211c+211dx)^m(ag+bgx)^{-2-m}\left(A+B\right.$$

Mathematica [F] time = 0.57, size = 0, normalized size = 0.00

$$\int (ag+bgx)^{-2-m}(ci+dix)^m\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^p dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])^p,x]
```

```
[Out] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])^p, x]
```

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(bgx+ag\right)^{-m-2}(dix+ci)^m\left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^p, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^p,x, algorithm="fricas")
```

```
[Out] integral((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m*(B*log(e*((b*x + a)/(d*x +
c))^n) + A)^p, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{-m-2}(dix+ci)^{m}\left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^p,x, algorithm="giac")
```

```
[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m*(B*log(e*((b*x + a)/(d*x +
 c))^n) + A)^p, x)
```

maple [F] time = 3.53, size = 0, normalized size = 0.00

$$\int \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{p}\left(bgx+ag\right)^{-m-2}(dix+ci)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^p,x)
```

```
[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{-m-2}(dix+ci)^{m}\left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^p,x, algorithm="maxima")
```

```
[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m*(B*log(e*((b*x + a)/(d*x +
 c))^n) + A)^p, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c\,i+d\,i\,x)^{m}\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^{n}\right)\right)^{p}}{\left(a\,g+b\,g\,x\right)^{m+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^p)/(a*g + b*g*x
)^(m + 2),x)
```

```
[Out] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^p)/(a*g + b*g*x
)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m*(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**p,x)
```

```
[Out] Timed out
```

3.212 $\int (ag+bgx)^m(ci+dix)^{-2-m}\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3 dx$

Optimal. Leaf size=292

$$\frac{6B^2n^2(a+bx)(g(a+bx))^m(i(c+dx))^{-m}\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{i^2(m+1)^3(c+dx)(bc-ad)}+\frac{(a+bx)(g(a+bx))^m(i(c+dx))^{-m}\left(B\log\left(e\right.\right.}{i^2(m+1)(c+dx)(bc-ad)}$$

```
[Out] -6*B^3*n^3*(b*x+a)*(g*(b*x+a))^m/(-a*d+b*c)/i^2/(1+m)^4/(d*x+c)/((i*(d*x+c)
)^m)+6*B^2*n^2*(b*x+a)*(g*(b*x+a))^m*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+
b*c)/i^2/(1+m)^3/(d*x+c)/((i*(d*x+c))^m)-3*B*n*(b*x+a)*(g*(b*x+a))^m*(A+B*l
n(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/i^2/(1+m)^2/(d*x+c)/((i*(d*x+c))^m)+
(b*x+a)*(g*(b*x+a))^m*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^3/(-a*d+b*c)/i^2/(1+m
)/(d*x+c)/((i*(d*x+c))^m)
```

Rubi [F] time = 1.98, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (ag+bgx)^m(ci+dix)^{-2-m}\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3 dx$$

Verification is Not applicable to the result.

```
[In] Int[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x
))^n])^3,x]
```

```
[Out] (A^3*(a*g + b*g*x)^(1 + m)*(c*i + d*i*x)^(-1 - m))/((b*c - a*d)*g*i*(1 + m)
) - (3*A^2*B*n*(a*g + b*g*x)^(1 + m)*(c*i + d*i*x)^(-1 - m))/((b*c - a*d)*g
*i*(1 + m)^2) + (3*A^2*B*(a*g + b*g*x)^(1 + m)*(c*i + d*i*x)^(-1 - m)*Log[e
*((a + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i*(1 + m)) + 3*A*B^2*Defer[Int][(
a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*Log[e*((a + b*x)/(c + d*x))^n]^2, x]
 + B^3*Defer[Int][(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*Log[e*((a + b*x)/(c
 + d*x))^n]^3, x]
```

Rubi steps

$$\begin{aligned}
\int (212c+212dx)^{-2-m}(ag+bgx)^m\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3 dx &= \int \left(A^3(212c+212dx)^{-2-m}(ag+bgx)^m+\right.\\
&= A^3\int (212c+212dx)^{-2-m}(ag+bgx)^m\,dx\\
&= \frac{A^3(212c+212dx)^{-1-m}(ag+bgx)^{1+m}}{212(bc-ad)g(1+m)}+\\
&= \frac{A^3(212c+212dx)^{-1-m}(ag+bgx)^{1+m}}{212(bc-ad)g(1+m)}+\\
&= -\frac{3\ 212^{-2-m}A^2Bn(c+dx)^{-1-m}(ag+bgx)^{1}}{(bc-ad)g(1+m)^2}
\end{aligned}$$

Mathematica [A] time = 6.96, size = 206, normalized size = 0.71

$$\frac{(a+bx)(g(a+bx))^m(i(c+dx))^{-m-1}\left(3B(m+1)\left(A^2(m+1)^2-2AB(m+1)n+2B^2n^2\right)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+3B^2(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])^3,x]
```

```
[Out] ((a + b*x)*(g*(a + b*x))^m*(i*(c + d*x))^(-1 - m)*(A^3*(1 + m)^3 - 3*A^2*B*
(1 + m)^2*n + 6*A*B^2*(1 + m)*n^2 - 6*B^3*n^3 + 3*B*(1 + m)*(A^2*(1 + m)^2
- 2*A*B*(1 + m)*n + 2*B^2*n^2)*Log[e*((a + b*x)/(c + d*x))^n] + 3*B^2*(1 +
m)^2*(A + A*m - B*n)*Log[e*((a + b*x)/(c + d*x))^n]^2 + B^3*(1 + m)^3*Log[e
*((a + b*x)/(c + d*x))^n]^3))/((b*c - a*d)*i*(1 + m)^4)
```

fricas [B] time = 1.02, size = 2680, normalized size = 9.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="fricas")
```

```
[Out] (A^3*a*c*m^3 - 6*B^3*a*c*n^3 + 3*A^3*a*c*m^2 + 3*A^3*a*c*m + A^3*a*c + (B^3
*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c + (B^3*b*d*m^3 + 3*B^3*b*d
*m^2 + 3*B^3*b*d*m + B^3*b*d)*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d
)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*x)*log(e)^3 +
((B^3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*n^3*x^2 + (B^3*b*c +
 B^3*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c
 + B^3*a*d)*m)*n^3*x + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c
)*n^3)*log((b*x + a)/(d*x + c))^3 + 6*(A*B^2*a*c*m + A*B^2*a*c)*n^2 + (A^3*
b*d*m^3 - 6*B^3*b*d*n^3 + 3*A^3*b*d*m^2 + 3*A^3*b*d*m + A^3*b*d + 6*(A*B^2*
b*d*m + A*B^2*b*d)*n^2 - 3*(A^2*B*b*d*m^2 + 2*A^2*B*b*d*m + A^2*B*b*d)*n)*x
^2 + 3*(A*B^2*a*c*m^3 + 3*A*B^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c + (A*B^
2*b*d*m^3 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b*d - (B^3*b*d*m^2 + 2*
B^3*b*d*m + B^3*b*d)*n)*x^2 - (B^3*a*c*m^2 + 2*B^3*a*c*m + B^3*a*c)*n + (A*
B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m^3 + 3*(A*B^2*b*c + A*B^2*a*
d)*m^2 + 3*(A*B^2*b*c + A*B^2*a*d)*m - (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*
a*d)*m^2 + 2*(B^3*b*c + B^3*a*d)*m)*n)*x + ((B^3*b*d*m^3 + 3*B^3*b*d*m^2 +
3*B^3*b*d*m + B^3*b*d)*n*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^3
 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*n*x + (B^3*a*c*m^3
+ 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c)*n)*log((b*x + a)/(d*x + c)))*log(e
)^2 - 3*((B^3*a*c*m^2 + 2*B^3*a*c*m + B^3*a*c)*n^3 - (A*B^2*a*c*m^3 + 3*A*B
^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c)*n^2 + ((B^3*b*d*m^2 + 2*B^3*b*d*m +
 B^3*b*d)*n^3 - (A*B^2*b*d*m^3 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b*
d)*n^2)*x^2 + ((B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^2 + 2*(B^3*b*c +
B^3*a*d)*m)*n^3 - (A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m^3 + 3*
(A*B^2*b*c + A*B^2*a*d)*m^2 + 3*(A*B^2*b*c + A*B^2*a*d)*m)*n^2)*x)*log((b*x
 + a)/(d*x + c))^2 - 3*(A^2*B*a*c*m^2 + 2*A^2*B*a*c*m + A^2*B*a*c)*n + (A^3
*b*c + A^3*a*d + (A^3*b*c + A^3*a*d)*m^3 - 6*(B^3*b*c + B^3*a*d)*n^3 + 3*(A
^3*b*c + A^3*a*d)*m^2 + 6*(A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*
m)*n^2 + 3*(A^3*b*c + A^3*a*d)*m - 3*(A^2*B*b*c + A^2*B*a*d + (A^2*B*b*c +
A^2*B*a*d)*m^2 + 2*(A^2*B*b*c + A^2*B*a*d)*m)*n)*x + 3*(A^2*B*a*c*m^3 + 3*A
^2*B*a*c*m^2 + 3*A^2*B*a*c*m + A^2*B*a*c + 2*(B^3*a*c*m + B^3*a*c)*n^2 + (A
^2*B*b*d*m^3 + 3*A^2*B*b*d*m^2 + 3*A^2*B*b*d*m + A^2*B*b*d + 2*(B^3*b*d*m +
 B^3*b*d)*n^2 - 2*(A*B^2*b*d*m^2 + 2*A*B^2*b*d*m + A*B^2*b*d)*n)*x^2 + ((B^
3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*n^2*x^2 + (B^3*b*c + B^3
*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B
^3*a*d)*m)*n^2*x + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c)*n^
2)*log((b*x + a)/(d*x + c))^2 - 2*(A*B^2*a*c*m^2 + 2*A*B^2*a*c*m + A*B^2*a*
c)*n + (A^2*B*b*c + A^2*B*a*d + (A^2*B*b*c + A^2*B*a*d)*m^3 + 3*(A^2*B*b*c
+ A^2*B*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m)*n^2 + 3*(A
^2*B*b*c + A^2*B*a*d)*m - 2*(A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d
)*m^2 + 2*(A*B^2*b*c + A*B^2*a*d)*m)*n)*x - 2*((B^3*a*c*m^2 + 2*B^3*a*c*m +
```

```
B^3*a*c)*n^2 + ((B^3*b*d*m^2 + 2*B^3*b*d*m + B^3*b*d)*n^2 - (A*B^2*b*d*m^3
 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b*d)*n)*x^2 - (A*B^2*a*c*m^3 + 3
*A*B^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c)*n + ((B^3*b*c + B^3*a*d + (B^3*
b*c + B^3*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d)*m)*n^2 - (A*B^2*b*c + A*B^2*a*d
+ (A*B^2*b*c + A*B^2*a*d)*m^3 + 3*(A*B^2*b*c + A*B^2*a*d)*m^2 + 3*(A*B^2*b*
c + A*B^2*a*d)*m)*n)*x)*log((b*x + a)/(d*x + c)))*log(e) + 3*(2*(B^3*a*c*m
+ B^3*a*c)*n^3 - 2*(A*B^2*a*c*m^2 + 2*A*B^2*a*c*m + A*B^2*a*c)*n^2 + (2*(B^
3*b*d*m + B^3*b*d)*n^3 - 2*(A*B^2*b*d*m^2 + 2*A*B^2*b*d*m + A*B^2*b*d)*n^2
+ (A^2*B*b*d*m^3 + 3*A^2*B*b*d*m^2 + 3*A^2*B*b*d*m + A^2*B*b*d)*n)*x^2 + (A
^2*B*a*c*m^3 + 3*A^2*B*a*c*m^2 + 3*A^2*B*a*c*m + A^2*B*a*c)*n + (2*(B^3*b*c
 + B^3*a*d + (B^3*b*c + B^3*a*d)*m)*n^3 - 2*(A*B^2*b*c + A*B^2*a*d + (A*B^2
*b*c + A*B^2*a*d)*m^2 + 2*(A*B^2*b*c + A*B^2*a*d)*m)*n^2 + (A^2*B*b*c + A^2
*B*a*d + (A^2*B*b*c + A^2*B*a*d)*m^3 + 3*(A^2*B*b*c + A^2*B*a*d)*m^2 + 3*(A
^2*B*b*c + A^2*B*a*d)*m)*n)*x)*log((b*x + a)/(d*x + c)))*(b*g*x + a*g)^m*e^
(-(m + 2)*log(b*g*x + a*g) + (m + 2)*log((b*x + a)/(d*x + c)) - (m + 2)*log
(i/g))/((b*c - a*d)*m^4 + 4*(b*c - a*d)*m^3 + 6*(b*c - a*d)*m^2 + b*c - a*d
 + 4*(b*c - a*d)*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log\left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right) + A\right)^{3} \left(bgx+ag\right)^{m} (dix+ci)^{-m-2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="giac")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^3*(b*g*x + a*g)^m*(d*i*x +
 c*i)^(-m - 2), x)
```

maple [F] time = 8.69, size = 0, normalized size = 0.00

$$\int \left(B \ln\left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right) + A\right)^{3} \left(bgx+ag\right)^{m} (dix+ci)^{-m-2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)
```

```
[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log\left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right) + A\right)^{3} \left(bgx+ag\right)^{m} (dix+ci)^{-m-2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="maxima")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^3*(b*g*x + a*g)^m*(d*i*x +
 c*i)^(-m - 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^m\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^3}{{\left(c\,i+d\,i\,x\right)}^{m+2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3)/(c*i + d*i*x
)^(m + 2),x)
```

```
[Out] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3)/(c*i + d*i*x
)^(m + 2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)*(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**3,x)
```

```
[Out] Timed out
```

3.213 $\int (ag+bgx)^m (ci+dix)^{-2-m} \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=210

$$\frac{(a+bx)(g(a+bx))^m(i(c+dx))^{-m}\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{i^2(m+1)(c+dx)(bc-ad)}-\frac{2Bn(a+bx)(g(a+bx))^m(i(c+dx))^{-m}\left(B\log\left(e\left(\right.\right.\right.}{i^2(m+1)^2(c+dx)(bc-ad)}$$

```
[Out] 2*B^2*n^2*(b*x+a)*(g*(b*x+a))^m/(-a*d+b*c)/i^2/(1+m)^3/(d*x+c)/((i*(d*x+c))
^m)-2*B*n*(b*x+a)*(g*(b*x+a))^m*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/
i^2/(1+m)^2/(d*x+c)/((i*(d*x+c))^m)+(b*x+a)*(g*(b*x+a))^m*(A+B*ln(e*((b*x+a
)/(d*x+c))^n))^2/(-a*d+b*c)/i^2/(1+m)/(d*x+c)/((i*(d*x+c))^m)
```

Rubi [F] time = 1.22, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (ag+bgx)^m (ci+dix)^{-2-m} \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$$

Verification is Not applicable to the result.

```
[In] Int[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x
))^n])^2,x]
```

```
[Out] (A^2*(a*g + b*g*x)^(1 + m)*(c*i + d*i*x)^(-1 - m))/((b*c - a*d)*g*i*(1 + m)
) - (2*A*B*n*(a*g + b*g*x)^(1 + m)*(c*i + d*i*x)^(-1 - m))/((b*c - a*d)*g*i
*(1 + m)^2) + (2*A*B*(a*g + b*g*x)^(1 + m)*(c*i + d*i*x)^(-1 - m)*Log[e*((a
 + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i*(1 + m)) + B^2*Defer[Int][(a*g + b*
g*x)^m*(c*i + d*i*x)^(-2 - m)*Log[e*((a + b*x)/(c + d*x))^n]^2, x]
```

Rubi steps

$$\int (213c+213dx)^{-2-m}(ag+bgx)^m\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx = \int \left(A^2(213c+213dx)^{-2-m}(ag+bgx)^m + \right.$$

$$= A^2\int (213c+213dx)^{-2-m}(ag+bgx)^m\, dx$$

$$= \frac{A^2(213c+213dx)^{-1-m}(ag+bgx)^{1+m}}{213(bc-ad)g(1+m)} + $$

$$= \frac{A^2(213c+213dx)^{-1-m}(ag+bgx)^{1+m}}{213(bc-ad)g(1+m)} + $$

$$= -\frac{2\ 213^{-2-m}ABn(c+dx)^{-1-m}(ag+bgx)^{1}}{(bc-ad)g(1+m)^2}$$

Mathematica [A] time = 2.02, size = 134, normalized size = 0.64

$$\frac{(a+bx)(g(a+bx))^m(i(c+dx))^{-m-1}\left(2B(m+1)(Am+A-Bn)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+B^2(m+1)^2\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right.}{i(m+1)^3(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])^2,x]
```

```
[Out] ((a + b*x)*(g*(a + b*x))^m*(i*(c + d*x))^(-1 - m)*(A^2*(1 + m)^2 - 2*A*B*(1
 + m)*n + 2*B^2*n^2 + 2*B*(1 + m)*(A + A*m - B*n)*Log[e*((a + b*x)/(c + d*x
))^n] + B^2*(1 + m)^2*Log[e*((a + b*x)/(c + d*x))^n]^2))/((b*c - a*d)*i*(1
+ m)^3)
```

fricas [B] time = 1.08, size = 991, normalized size = 4.72

$$\frac{\left(A^2acm^2 + 2\,B^2acn^2 + 2\,A^2acm + A^2ac + \left(A^2bdm^2 + 2\,B^2bdn^2 + 2\,A^2bdm + A^2bd - 2\,(ABbdm + ABbd)n\right)x^2 + \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="fricas")
```

```
[Out] (A^2*a*c*m^2 + 2*B^2*a*c*n^2 + 2*A^2*a*c*m + A^2*a*c + (A^2*b*d*m^2 + 2*B^2
*b*d*n^2 + 2*A^2*b*d*m + A^2*b*d - 2*(A*B*b*d*m + A*B*b*d)*n)*x^2 + (B^2*a*
c*m^2 + 2*B^2*a*c*m + B^2*a*c + (B^2*b*d*m^2 + 2*B^2*b*d*m + B^2*b*d)*x^2 +
 (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m^2 + 2*(B^2*b*c + B^2*a*d)*m)*x)
*log(e)^2 + ((B^2*b*d*m^2 + 2*B^2*b*d*m + B^2*b*d)*n^2*x^2 + (B^2*b*c + B^2
*a*d + (B^2*b*c + B^2*a*d)*m^2 + 2*(B^2*b*c + B^2*a*d)*m)*n^2*x + (B^2*a*c*
m^2 + 2*B^2*a*c*m + B^2*a*c)*n^2)*log((b*x + a)/(d*x + c))^2 - 2*(A*B*a*c*m
 + A*B*a*c)*n + (A^2*b*c + A^2*a*d + (A^2*b*c + A^2*a*d)*m^2 + 2*(B^2*b*c +
 B^2*a*d)*n^2 + 2*(A^2*b*c + A^2*a*d)*m - 2*(A*B*b*c + A*B*a*d + (A*B*b*c +
 A*B*a*d)*m)*n)*x + 2*(A*B*a*c*m^2 + 2*A*B*a*c*m + A*B*a*c + (A*B*b*d*m^2 +
 2*A*B*b*d*m + A*B*b*d - (B^2*b*d*m + B^2*b*d)*n)*x^2 - (B^2*a*c*m + B^2*a*
c)*n + (A*B*b*c + A*B*a*d + (A*B*b*c + A*B*a*d)*m^2 + 2*(A*B*b*c + A*B*a*d)
*m - (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m)*n)*x + ((B^2*b*d*m^2 + 2*B
^2*b*d*m + B^2*b*d)*n*x^2 + (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m^2 +
2*(B^2*b*c + B^2*a*d)*m)*n*x + (B^2*a*c*m^2 + 2*B^2*a*c*m + B^2*a*c)*n)*log
((b*x + a)/(d*x + c)))*log(e) - 2*((B^2*a*c*m + B^2*a*c)*n^2 + ((B^2*b*d*m
+ B^2*b*d)*n^2 - (A*B*b*d*m^2 + 2*A*B*b*d*m + A*B*b*d)*n)*x^2 - (A*B*a*c*m^
2 + 2*A*B*a*c*m + A*B*a*c)*n + ((B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m)
*n^2 - (A*B*b*c + A*B*a*d + (A*B*b*c + A*B*a*d)*m^2 + 2*(A*B*b*c + A*B*a*d)
*m)*n)*x)*log((b*x + a)/(d*x + c)))*(b*g*x + a*g)^m*e^(-(m + 2)*log(b*g*x +
 a*g) + (m + 2)*log((b*x + a)/(d*x + c)) - (m + 2)*log(i/g))/((b*c - a*d)*m
^3 + 3*(b*c - a*d)*m^2 + b*c - a*d + 3*(b*c - a*d)*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}\left(bgx+ag\right)^{m}(dix+ci)^{-m-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="giac")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^2*(b*g*x + a*g)^m*(d*i*x +
 c*i)^(-m - 2), x)
```

maple [F] time = 7.86, size = 0, normalized size = 0.00

$$\int \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}\left(bgx+ag\right)^{m}(dix+ci)^{-m-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}\left(bgx+ag\right)^{m}(dix+ci)^{-m-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="maxima")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^2*(b*g*x + a*g)^m*(d*i*x +
 c*i)^(-m - 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)^{m}\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^{n}\right)\right)^{2}}{\left(c\,i+d\,i\,x\right)^{m+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^(m + 2),x)
```

```
[Out] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(c*i + d*i*x
)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)*(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**2,x)
```

```
[Out] Timed out
```

3.214 $\int (ag+bgx)^m(ci+dix)^{-2-m}\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx$

Optimal. Leaf size=128

$$\frac{(a+bx)(g(a+bx))^m(i(c+dx))^{-m}\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{i^2(m+1)(c+dx)(bc-ad)}-\frac{Bn(a+bx)(g(a+bx))^m(i(c+dx))^{-m}}{i^2(m+1)^2(c+dx)(bc-ad)}$$

```
[Out] -B*n*(b*x+a)*(g*(b*x+a))^m/(-a*d+b*c)/i^2/(1+m)^2/(d*x+c)/((i*(d*x+c))^m)+(
b*x+a)*(g*(b*x+a))^m*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/i^2/(1+m)/(
d*x+c)/((i*(d*x+c))^m)
```

Rubi [A] time = 0.62, antiderivative size = 168, normalized size of antiderivative = 1.31, number of steps used = 6, number of rules used = 4, integrand size = 47, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.085, Rules used = {6742, 37, 2554, 12}

$$\frac{A(ag+bgx)^{m+1}(ci+dix)^{-m-1}}{gi(m+1)(bc-ad)}+\frac{B(ag+bgx)^{m+1}(ci+dix)^{-m-1}\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{gi(m+1)(bc-ad)}-\frac{Bn(ag+bgx)^{m+1}(ci+dix)^{-m-1}}{gi(m+1)^2(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c + d*x
))^n]),x]
```

```
[Out] (A*(a*g + b*g*x)^(1 + m)*(c*i + d*i*x)^(-1 - m))/((b*c - a*d)*g*i*(1 + m))
- (B*n*(a*g + b*g*x)^(1 + m)*(c*i + d*i*x)^(-1 - m))/((b*c - a*d)*g*i*(1 +
m)^2) + (B*(a*g + b*g*x)^(1 + m)*(c*i + d*i*x)^(-1 - m)*Log[e*((a + b*x)/(c
 + d*x))^n])/((b*c - a*d)*g*i*(1 + m))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 2554

```
Int[Log[u_]*(v_), x_Symbol] :> With[{w = IntHide[v, x]}, Dist[Log[u], w, x]
 - Int[SimplifyIntegrand[(w*D[u, x])/u, x], x] /; InverseFunctionFreeQ[w, x
]] /; InverseFunctionFreeQ[u, x]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int (214c+214dx)^{-2-m}(ag+bgx)^m\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx=\int\left(A(214c+214dx)^{-2-m}(ag+bgx)^m+B\right.$$

$$=A\int(214c+214dx)^{-2-m}(ag+bgx)^m\,dx+$$

$$=\frac{A(214c+214dx)^{-1-m}(ag+bgx)^{1+m}}{214(bc-ad)g(1+m)}+\frac{B(2}{}$$

$$=\frac{A(214c+214dx)^{-1-m}(ag+bgx)^{1+m}}{214(bc-ad)g(1+m)}+\frac{B(2}{}$$

$$=-\frac{214^{-2-m}Bn(c+dx)^{-1-m}(ag+bgx)^{1+m}}{(bc-ad)g(1+m)^2}+$$

Mathematica [A] time = 0.52, size = 78, normalized size = 0.61

$$\frac{(a+bx)(g(a+bx))^m(i(c+dx))^{-m-1}\left(B(m+1)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+Am+A-Bn\right)}{i(m+1)^2(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n]),x]
```

```
[Out] ((a + b*x)*(g*(a + b*x))^m*(i*(c + d*x))^(-1 - m)*(A + A*m - B*n + B*(1 + m
)*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)*i*(1 + m)^2)
```

fricas [B] time = 0.91, size = 274, normalized size = 2.14

$$\frac{\left(Aacm-Bacn+Aac+(Abdm-Bbdn+Abd)x^2+(Abc+Aad+(Abc+Aad)m-(Bbc+Bad)n)x+\left(Bacm\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="fricas")
```

```
[Out] (A*a*c*m - B*a*c*n + A*a*c + (A*b*d*m - B*b*d*n + A*b*d)*x^2 + (A*b*c + A*a
*d + (A*b*c + A*a*d)*m - (B*b*c + B*a*d)*n)*x + (B*a*c*m + B*a*c + (B*b*d*m
 + B*b*d)*x^2 + (B*b*c + B*a*d + (B*b*c + B*a*d)*m)*x)*log(e) + ((B*b*d*m +
 B*b*d)*n*x^2 + (B*b*c + B*a*d + (B*b*c + B*a*d)*m)*n*x + (B*a*c*m + B*a*c)
*n)*log((b*x + a)/(d*x + c)))*(b*g*x + a*g)^m*e^(-(m + 2)*log(b*g*x + a*g)
+ (m + 2)*log((b*x + a)/(d*x + c)) - (m + 2)*log(i/g))/((b*c - a*d)*m^2 + b
*c - a*d + 2*(b*c - a*d)*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)\left(bgx+ag\right)^m(dix+ci)^{-m-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="giac")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)*(b*g*x + a*g)^m*(d*i*x + c
*i)^(-m - 2), x)
```

maple [F] time = 8.82, size = 0, normalized size = 0.00

$$\int \left(B \ln \left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right) \left(bgx+ag\right)^{m} \left(dix+ci\right)^{-m-2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log \left(e \left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)\left(bgx+ag\right)^{m}\left(dix+ci\right)^{-m-2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="maxima")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)*(b*g*x + a*g)^m*(d*i*x + c
*i)^(-m - 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a\,g+b\,g\,x\right)^m\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}{{\left(c\,i+d\,i\,x\right)}^{m+2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
(m + 2),x)
```

```
[Out] int(((a*g + b*g*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(c*i + d*i*x)^
(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)*(A+B*ln(e*((b*x+a)/(d*x+c))**n
)),x)
```

```
[Out] Timed out
```

3.215 $\int \frac{(ag+bgx)^m(ci+dix)^{-2-m}}{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx$

Optimal. Leaf size=125

$$\frac{(a+bx)e^{-\frac{A(m+1)}{Bn}}(g(a+bx))^m(i(c+dx))^{-m}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-\frac{m+1}{n}}\text{Ei}\left(\frac{(m+1)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{Bi^2n(c+dx)(bc-ad)}$$

```
[Out] (b*x+a)*(g*(b*x+a))^m*Ei((1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/B/n)/B/(-a*d
+b*c)/exp(A*(1+m)/B/n)/i^2/n/((e*((b*x+a)/(d*x+c))^n)^((1+m)/n))/(d*x+c)/((
i*(d*x+c))^m)
```

Rubi [F] time = 0.74, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(ag+bgx)^m(ci+dix)^{-2-m}}{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d
*x))^n]),x]
```

```
[Out] Defer[Int][((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)
/(c + d*x))^n]), x]
```

Rubi steps

$$\int \frac{(215c+215dx)^{-2-m}(ag+bgx)^m}{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx=\int \frac{(215c+215dx)^{-2-m}(ag+bgx)^m}{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx$$

Mathematica [F] time = 0.25, size = 0, normalized size = 0.00

$$\int \frac{(ag+bgx)^m(ci+dix)^{-2-m}}{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/
(c + d*x))^n]),x]
```

```
[Out] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/
(c + d*x))^n]), x]
```

fricas [A] time = 0.83, size = 98, normalized size = 0.78

$$\frac{\text{Ei}\left(\frac{(Bm+B)n\log\left(\frac{bx+a}{dx+c}\right)+Am+(Bm+B)\log(e)+A}{Bn}\right)e^{\left(-\frac{(Bm+2B)n\log\left(\frac{i}{g}\right)+Am+(Bm+B)\log(e)+A}{Bn}\right)}}{(Bbc-Bad)g^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="fricas")
```

```
[Out] Ei(((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)/(B*n
))*e^(-((B*m + 2*B)*n*log(i/g) + A*m + (B*m + B)*log(e) + A)/(B*n))/((B*b*c
 - B*a*d)*g^2*n)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{m}(dix+ci)^{-m-2}}{B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="giac")
```

```
[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)/(B*log(e*((b*x + a)/(d*x +
 c))^n) + A), x)
```

maple [F] time = 4.21, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{m}(dix+ci)^{-m-2}}{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{m}(dix+ci)^{-m-2}}{B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="maxima")
```

```
[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)/(B*log(e*((b*x + a)/(d*x +
 c))^n) + A), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a\,g+b\,g\,x\right)^m}{{\left(c\,i+d\,i\,x\right)}^{m+2}\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^m/((c*i + d*i*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))),x)
```

```
[Out] int((a*g + b*g*x)^m/((c*i + d*i*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)/(A+B*ln(e*((b*x+a)/(d*x+c))**n
)),x)
```

```
[Out] Timed out
```

3.216 $\int \frac{(ag+bgx)^m(ci+dix)^{-2-m}}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}\,dx$

Optimal. Leaf size=206

$$\frac{(m+1)(a+bx)e^{-\frac{A(m+1)}{Bn}}(g(a+bx))^m(i(c+dx))^{-m}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-\frac{m+1}{n}}\text{Ei}\left(\frac{(m+1)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{B^2i^2n^2(c+dx)(bc-ad)}-\frac{(a+bx)(g(a}{Bi^2n(c+dx)(bc-a}$$

```
[Out] (1+m)*(b*x+a)*(g*(b*x+a))^m*Ei((1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/B/n)/B
^2/(-a*d+b*c)/exp(A*(1+m)/B/n)/i^2/n^2/((e*((b*x+a)/(d*x+c))^n)^((1+m)/n))/
(d*x+c)/((i*(d*x+c))^m)-(b*x+a)*(g*(b*x+a))^m/B/(-a*d+b*c)/i^2/n/(d*x+c)/((
i*(d*x+c))^m)/(A+B*ln(e*((b*x+a)/(d*x+c))^n))
```

Rubi [F] time = 0.83, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(ag+bgx)^m(ci+dix)^{-2-m}}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d
*x))^n])^2,x]
```

```
[Out] Defer[Int][((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)
/(c + d*x))^n])^2, x]
```

Rubi steps

$$\int \frac{(216c+216dx)^{-2-m}(ag+bgx)^m}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}\,dx=\int \frac{(216c+216dx)^{-2-m}(ag+bgx)^m}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}\,dx$$

Mathematica [F] time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{(ag+bgx)^m(ci+dix)^{-2-m}}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/
(c + d*x))^n])^2,x]
```

```
[Out] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/
(c + d*x))^n])^2, x]
```

fricas [A] time = 1.00, size = 293, normalized size = 1.42

$$-\frac{\left(Bbdg^2nx^2+Bacg^2n+(Bbc+Bad)g^2nx\right)\left(bgx+ag\right)^m e^{\left(-(m+2)\log\left(bgx+ag\right)+(m+2)\log\left(\frac{bx+a}{dx+c}\right)-(m+2)\log\left(\frac{i}{g}\right)\right)}-\left((Bm+B)\right.}{\left(B^3bc-B^3ad\right)g^2n^3\log\left(\frac{bx+a}{dx+c}\right)+\left(B^3bc-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="fricas")
```

```
[Out] -((B*b*d*g^2*n*x^2 + B*a*c*g^2*n + (B*b*c + B*a*d)*g^2*n*x)*(b*g*x + a*g)^m
*e^(-(m + 2)*log(b*g*x + a*g) + (m + 2)*log((b*x + a)/(d*x + c)) - (m + 2)*
log(i/g)) - ((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e)
+ A)*Ei(((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)
/(B*n))*e^(-((B*m + 2*B)*n*log(i/g) + A*m + (B*m + B)*log(e) + A)/(B*n)))/(
(B^3*b*c - B^3*a*d)*g^2*n^3*log((b*x + a)/(d*x + c)) + (B^3*b*c - B^3*a*d)*
g^2*n^2*log(e) + (A*B^2*b*c - A*B^2*a*d)*g^2*n^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{m}(dix+ci)^{-m-2}}{\left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="giac")
```

```
[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)/(B*log(e*((b*x + a)/(d*x +
 c))^n) + A)^2, x)
```

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{m}(dix+ci)^{-m-2}}{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-g^{m}(m+1)\int -\frac{}{\left(B^{2}d^{2}i^{m+2}nx^{2}+2\,B^{2}cdi^{m+2}nx+B^{2}c^{2}i^{m+2}n\right)(dx+c)^{m}\log\left((bx+a)^{n}\right)-\left(B^{2}d^{2}i^{m+2}nx^{2}+2\,B^{2}c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="maxima")
```

```
[Out] -g^m*(m + 1)*integrate(-(b*x + a)^m/((B^2*d^2*i^(m + 2)*n*x^2 + 2*B^2*c*d*i
^(m + 2)*n*x + B^2*c^2*i^(m + 2)*n)*(d*x + c)^m*log((b*x + a)^n) - (B^2*d^2
*i^(m + 2)*n*x^2 + 2*B^2*c*d*i^(m + 2)*n*x + B^2*c^2*i^(m + 2)*n)*(d*x + c)
^m*log((d*x + c)^n) + (B^2*c^2*i^(m + 2)*n*log(e) + A*B*c^2*i^(m + 2)*n + (
B^2*d^2*i^(m + 2)*n*log(e) + A*B*d^2*i^(m + 2)*n)*x^2 + 2*(B^2*c*d*i^(m + 2
)*n*log(e) + A*B*c*d*i^(m + 2)*n)*x)*(d*x + c)^m), x) - (b*g^m*x + a*g^m)*(
b*x + a)^m/(((b*c*d*i^(m + 2)*n - a*d^2*i^(m + 2)*n)*B^2*x + (b*c^2*i^(m +
2)*n - a*c*d*i^(m + 2)*n)*B^2)*(d*x + c)^m*log((b*x + a)^n) - ((b*c*d*i^(m
+ 2)*n - a*d^2*i^(m + 2)*n)*B^2*x + (b*c^2*i^(m + 2)*n - a*c*d*i^(m + 2)*n)
*B^2)*(d*x + c)^m*log((d*x + c)^n) + ((b*c^2*i^(m + 2)*n - a*c*d*i^(m + 2)*
n)*A*B + (b*c^2*i^(m + 2)*n*log(e) - a*c*d*i^(m + 2)*n*log(e))*B^2 + ((b*c*
```

```
d*i^(m + 2)*n - a*d^2*i^(m + 2)*n)*A*B + (b*c*d*i^(m + 2)*n*log(e) - a*d^2*
i^(m + 2)*n*log(e))*B^2)*x)*(d*x + c)^m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a\,g+b\,g\,x\right)^m}{\left(c\,i+d\,i\,x\right)^{m+2}\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^m/((c*i + d*i*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))^2),x)
```

```
[Out] int((a*g + b*g*x)^m/((c*i + d*i*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)/(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**2,x)
```

```
[Out] Timed out
```

3.217 $\int \frac{(ag+bgx)^m(ci+dix)^{-2-m}}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3}\,dx$

Optimal. Leaf size=295

$$\frac{(m+1)^2(a+bx)e^{-\frac{A(m+1)}{Bn}}(g(a+bx))^m(i(c+dx))^{-m}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-\frac{m+1}{n}}\text{Ei}\left(\frac{(m+1)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{2B^3i^2n^3(c+dx)(bc-ad)}-\frac{(m+1)(a}{2B^2i^2n^2(c+dx}$$

```
[Out] 1/2*(1+m)^2*(b*x+a)*(g*(b*x+a))^m*Ei((1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/
B/n)/B^3/(-a*d+b*c)/exp(A*(1+m)/B/n)/i^2/n^3/((e*((b*x+a)/(d*x+c))^n)^((1+m
)/n))/(d*x+c)/((i*(d*x+c))^m)-1/2*(b*x+a)*(g*(b*x+a))^m/B/(-a*d+b*c)/i^2/n/
(d*x+c)/((i*(d*x+c))^m)/(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2-1/2*(1+m)*(b*x+a)
*(g*(b*x+a))^m/B^2/(-a*d+b*c)/i^2/n^2/(d*x+c)/((i*(d*x+c))^m)/(A+B*ln(e*((b
*x+a)/(d*x+c))^n))
```

Rubi [F] time = 0.81, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(ag+bgx)^m(ci+dix)^{-2-m}}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/(c + d
*x))^n])^3,x]
```

```
[Out] Defer[Int][((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)
/(c + d*x))^n])^3, x]
```

Rubi steps

$$\int \frac{(217c+217dx)^{-2-m}(ag+bgx)^m}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3}\,dx=\int \frac{(217c+217dx)^{-2-m}(ag+bgx)^m}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3}\,dx$$

Mathematica [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{(ag+bgx)^m(ci+dix)^{-2-m}}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/
(c + d*x))^n])^3,x]
```

```
[Out] Integrate[((a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m))/(A + B*Log[e*((a + b*x)/
(c + d*x))^n])^3, x]
```

fricas [B] time = 1.08, size = 818, normalized size = 2.77

$$-\frac{\left(B^2acg^2n^2+\left(B^2bdg^2n^2+\left(ABbdg^2m+ABbdg^2\right)n\right)x^2+\left(ABacg^2m+ABacg^2\right)n+\left(\left(B^2bc+B^2ad\right)g^2n^2+\left((AB\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="fricas")
```

```
[Out] -1/2*((B^2*a*c*g^2*n^2 + (B^2*b*d*g^2*n^2 + (A*B*b*d*g^2*m + A*B*b*d*g^2)*n
)*x^2 + (A*B*a*c*g^2*m + A*B*a*c*g^2)*n + ((B^2*b*c + B^2*a*d)*g^2*n^2 + ((
A*B*b*c + A*B*a*d)*g^2*m + (A*B*b*c + A*B*a*d)*g^2)*n)*x + ((B^2*b*d*g^2*m
+ B^2*b*d*g^2)*n*x^2 + ((B^2*b*c + B^2*a*d)*g^2*m + (B^2*b*c + B^2*a*d)*g^2
)*n*x + (B^2*a*c*g^2*m + B^2*a*c*g^2)*n)*log(e) + ((B^2*b*d*g^2*m + B^2*b*d
*g^2)*n^2*x^2 + ((B^2*b*c + B^2*a*d)*g^2*m + (B^2*b*c + B^2*a*d)*g^2)*n^2*x
 + (B^2*a*c*g^2*m + B^2*a*c*g^2)*n^2)*log((b*x + a)/(d*x + c)))*(b*g*x + a*
g)^m*e^(-(m + 2)*log(b*g*x + a*g) + (m + 2)*log((b*x + a)/(d*x + c)) - (m +
 2)*log(i/g)) - ((B^2*m^2 + 2*B^2*m + B^2)*n^2*log((b*x + a)/(d*x + c))^2 +
 A^2*m^2 + 2*A^2*m + (B^2*m^2 + 2*B^2*m + B^2)*log(e)^2 + 2*(A*B*m^2 + 2*A*
B*m + A*B)*n*log((b*x + a)/(d*x + c)) + A^2 + 2*(A*B*m^2 + 2*A*B*m + (B^2*m
^2 + 2*B^2*m + B^2)*n*log((b*x + a)/(d*x + c)) + A*B)*log(e))*Ei(((B*m + B)
*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)/(B*n))*e^(-((B*m
+ 2*B)*n*log(i/g) + A*m + (B*m + B)*log(e) + A)/(B*n)))/((B^5*b*c - B^5*a*d
)*g^2*n^5*log((b*x + a)/(d*x + c))^2 + (B^5*b*c - B^5*a*d)*g^2*n^3*log(e)^2
 + 2*(A*B^4*b*c - A*B^4*a*d)*g^2*n^4*log((b*x + a)/(d*x + c)) + (A^2*B^3*b*
c - A^2*B^3*a*d)*g^2*n^3 + 2*((B^5*b*c - B^5*a*d)*g^2*n^4*log((b*x + a)/(d*
x + c)) + (A*B^4*b*c - A*B^4*a*d)*g^2*n^3)*log(e))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^m (dix+ci)^{-m-2}}{\left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="giac")
```

```
[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)/(B*log(e*((b*x + a)/(d*x +
 c))^n) + A)^3, x)
```

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^m (dix+ci)^{-m-2}}{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)
```

```
[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="maxima")
```

```
[Out] -(m^2 + 2*m + 1)*g^m*integrate(-1/2*(b*x + a)^m/((B^3*d^2*i^(m + 2)*n^2*x^2
 + 2*B^3*c*d*i^(m + 2)*n^2*x + B^3*c^2*i^(m + 2)*n^2)*(d*x + c)^m*log((b*x
+ a)^n) - (B^3*d^2*i^(m + 2)*n^2*x^2 + 2*B^3*c*d*i^(m + 2)*n^2*x + B^3*c^2*
i^(m + 2)*n^2)*(d*x + c)^m*log((d*x + c)^n) + (B^3*c^2*i^(m + 2)*n^2*log(e)
 + A*B^2*c^2*i^(m + 2)*n^2 + (B^3*d^2*i^(m + 2)*n^2*log(e) + A*B^2*d^2*i^(m
 + 2)*n^2)*x^2 + 2*(B^3*c*d*i^(m + 2)*n^2*log(e) + A*B^2*c*d*i^(m + 2)*n^2)
*x)*(d*x + c)^m), x) - 1/2*((B*b*g^m*(m + 1)*x + B*a*g^m*(m + 1))*(b*x + a)
^m*log((b*x + a)^n) - (B*b*g^m*(m + 1)*x + B*a*g^m*(m + 1))*(b*x + a)^m*log
((d*x + c)^n) + (A*a*g^m*(m + 1) + (g^m*(m + 1)*log(e) + g^m*n)*B*a + (A*b*
g^m*(m + 1) + (g^m*(m + 1)*log(e) + g^m*n)*B*b)*x)*(b*x + a)^m)/(((b*c*d*i^
(m + 2)*n^2 - a*d^2*i^(m + 2)*n^2)*B^4*x + (b*c^2*i^(m + 2)*n^2 - a*c*d*i^(
m + 2)*n^2)*B^4)*(d*x + c)^m*log((b*x + a)^n)^2 + ((b*c*d*i^(m + 2)*n^2 - a
*d^2*i^(m + 2)*n^2)*B^4*x + (b*c^2*i^(m + 2)*n^2 - a*c*d*i^(m + 2)*n^2)*B^4
)*(d*x + c)^m*log((d*x + c)^n)^2 + 2*((b*c^2*i^(m + 2)*n^2 - a*c*d*i^(m + 2
)*n^2)*A*B^3 + (b*c^2*i^(m + 2)*n^2*log(e) - a*c*d*i^(m + 2)*n^2*log(e))*B^
4 + ((b*c*d*i^(m + 2)*n^2 - a*d^2*i^(m + 2)*n^2)*A*B^3 + (b*c*d*i^(m + 2)*n
^2*log(e) - a*d^2*i^(m + 2)*n^2*log(e))*B^4)*x)*(d*x + c)^m*log((b*x + a)^n
) + ((b*c^2*i^(m + 2)*n^2 - a*c*d*i^(m + 2)*n^2)*A^2*B^2 + 2*(b*c^2*i^(m +
2)*n^2*log(e) - a*c*d*i^(m + 2)*n^2*log(e))*A*B^3 + (b*c^2*i^(m + 2)*n^2*lo
g(e)^2 - a*c*d*i^(m + 2)*n^2*log(e)^2)*B^4 + ((b*c*d*i^(m + 2)*n^2 - a*d^2*
i^(m + 2)*n^2)*A^2*B^2 + 2*(b*c*d*i^(m + 2)*n^2*log(e) - a*d^2*i^(m + 2)*n^
2*log(e))*A*B^3 + (b*c*d*i^(m + 2)*n^2*log(e)^2 - a*d^2*i^(m + 2)*n^2*log(e
)^2)*B^4)*x)*(d*x + c)^m - 2*(((b*c*d*i^(m + 2)*n^2 - a*d^2*i^(m + 2)*n^2)*
B^4*x + (b*c^2*i^(m + 2)*n^2 - a*c*d*i^(m + 2)*n^2)*B^4)*(d*x + c)^m*log((b
*x + a)^n) + ((b*c^2*i^(m + 2)*n^2 - a*c*d*i^(m + 2)*n^2)*A*B^3 + (b*c^2*i^
(m + 2)*n^2*log(e) - a*c*d*i^(m + 2)*n^2*log(e))*B^4 + ((b*c*d*i^(m + 2)*n^
2 - a*d^2*i^(m + 2)*n^2)*A*B^3 + (b*c*d*i^(m + 2)*n^2*log(e) - a*d^2*i^(m +
 2)*n^2*log(e))*B^4)*x)*(d*x + c)^m)*log((d*x + c)^n))
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a\,g+b\,g\,x\right)}^m}{{\left(c\,i+d\,i\,x\right)}^{m+2}\,{\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*g + b*g*x)^m/((c*i + d*i*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))^3),x)
```

```
[Out] int((a*g + b*g*x)^m/((c*i + d*i*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))^3), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)/(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**3,x)
```

```
[Out] Timed out
```

3.218 $\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3 dx$

Optimal. Leaf size=309

$$-\frac{6B^2n^2(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{i^2(m+1)^3(c+dx)(bc-ad)}-\frac{(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(B\right.}{i^2(m+1)(c+dx)(bc-\right.}$$

```
[Out] -6*B^3*n^3*(b*x+a)*(g*(b*x+a))^(-2-m)*(i*(d*x+c))^(2+m)/(-a*d+b*c)/i^2/(1+m
)^4/(d*x+c)-6*B^2*n^2*(b*x+a)*(g*(b*x+a))^(-2-m)*(i*(d*x+c))^(2+m)*(A+B*ln(
e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/i^2/(1+m)^3/(d*x+c)-3*B*n*(b*x+a)*(g*(b*
x+a))^(-2-m)*(i*(d*x+c))^(2+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)
/i^2/(1+m)^2/(d*x+c)-(b*x+a)*(g*(b*x+a))^(-2-m)*(i*(d*x+c))^(2+m)*(A+B*ln(e
*((b*x+a)/(d*x+c))^n))^3/(-a*d+b*c)/i^2/(1+m)/(d*x+c)
```

Rubi [F] time = 2.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (ag+bgx)^{-2-m}(ci+dix)^m\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3 dx$$

Verification is Not applicable to the result.

```
[In] Int[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c + d*x
))^n])^3,x]
```

```
[Out] -((A^3*(a*g + b*g*x)^(-1 - m)*(c*i + d*i*x)^(1 + m))/((b*c - a*d)*g*i*(1 +
m))) - (3*A^2*B*n*(a*g + b*g*x)^(-1 - m)*(c*i + d*i*x)^(1 + m))/((b*c - a*d
)*g*i*(1 + m)^2) - (3*A^2*B*(a*g + b*g*x)^(-1 - m)*(c*i + d*i*x)^(1 + m)*Lo
g[e*((a + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i*(1 + m)) + 3*A*B^2*Defer[Int
][(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*Log[e*((a + b*x)/(c + d*x))^n]^2,
x] + B^3*Defer[Int][(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*Log[e*((a + b*x)
/(c + d*x))^n]^3, x]
```

Rubi steps

$$\begin{aligned}\int (218c+218dx)^m(ag+bgx)^{-2-m}\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3 dx &= \int \left(A^3(218c+218dx)^m(ag+bgx)^{-2-m}+3A\right.\\ &= A^3\int (218c+218dx)^m(ag+bgx)^{-2-m}\,dx+\left(\right.\\ &= -\frac{A^3(218c+218dx)^{1+m}(ag+bgx)^{-1-m}}{218(bc-ad)g(1+m)}-\frac{3A}{}\\ &= -\frac{A^3(218c+218dx)^{1+m}(ag+bgx)^{-1-m}}{218(bc-ad)g(1+m)}-\frac{3A}{}\\ &= -\frac{3\,218^mA^2Bn(c+dx)^{1+m}(ag+bgx)^{-1-m}}{(bc-ad)g(1+m)^2}-\end{aligned}$$

Mathematica [A] time = 7.18, size = 206, normalized size = 0.67

$$-\frac{(c+dx)(g(a+bx))^{-m-1}(i(c+dx))^m\left(3B(m+1)\left(A^2(m+1)^2+2AB(m+1)n+2B^2n^2\right)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+3B^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])^3,x]
```

```
[Out] -(((g*(a + b*x))^(-1 - m)*(c + d*x)*(i*(c + d*x))^m*(A^3*(1 + m)^3 + 3*A^2*
B*(1 + m)^2*n + 6*A*B^2*(1 + m)*n^2 + 6*B^3*n^3 + 3*B*(1 + m)*(A^2*(1 + m)^
2 + 2*A*B*(1 + m)*n + 2*B^2*n^2)*Log[e*((a + b*x)/(c + d*x))^n] + 3*B^2*(1
+ m)^2*(A + A*m + B*n)*Log[e*((a + b*x)/(c + d*x))^n]^2 + B^3*(1 + m)^3*Log
[e*((a + b*x)/(c + d*x))^n]^3))/((b*c - a*d)*g*(1 + m)^4))
```

fricas [B] time = 0.81, size = 2669, normalized size = 8.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="fricas")
```

```
[Out] -(A^3*a*c*m^3 + 6*B^3*a*c*n^3 + 3*A^3*a*c*m^2 + 3*A^3*a*c*m + A^3*a*c + (B^
3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c + (B^3*b*d*m^3 + 3*B^3*b*
d*m^2 + 3*B^3*b*d*m + B^3*b*d)*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*
d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*x)*log(e)^3 +
 ((B^3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*n^3*x^2 + (B^3*b*c
+ B^3*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*
c + B^3*a*d)*m)*n^3*x + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*
c)*n^3)*log((b*x + a)/(d*x + c))^3 + 6*(A*B^2*a*c*m + A*B^2*a*c)*n^2 + (A^3
*b*d*m^3 + 6*B^3*b*d*n^3 + 3*A^3*b*d*m^2 + 3*A^3*b*d*m + A^3*b*d + 6*(A*B^2
*b*d*m + A*B^2*b*d)*n^2 + 3*(A^2*B*b*d*m^2 + 2*A^2*B*b*d*m + A^2*B*b*d)*n)*
x^2 + 3*(A*B^2*a*c*m^3 + 3*A*B^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c + (A*B
^2*b*d*m^3 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b*d + (B^3*b*d*m^2 + 2
*B^3*b*d*m + B^3*b*d)*n)*x^2 + (B^3*a*c*m^2 + 2*B^3*a*c*m + B^3*a*c)*n + (A
*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m^3 + 3*(A*B^2*b*c + A*B^2*a
*d)*m^2 + 3*(A*B^2*b*c + A*B^2*a*d)*m + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3
*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d)*m)*n)*x + ((B^3*b*d*m^3 + 3*B^3*b*d*m^2 +
 3*B^3*b*d*m + B^3*b*d)*n*x^2 + (B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^
3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c + B^3*a*d)*m)*n*x + (B^3*a*c*m^3
 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c)*n)*log((b*x + a)/(d*x + c)))*log(
e)^2 + 3*((B^3*a*c*m^2 + 2*B^3*a*c*m + B^3*a*c)*n^3 + (A*B^2*a*c*m^3 + 3*A*
B^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c)*n^2 + ((B^3*b*d*m^2 + 2*B^3*b*d*m
+ B^3*b*d)*n^3 + (A*B^2*b*d*m^3 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b
*d)*n^2)*x^2 + ((B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m^2 + 2*(B^3*b*c +
 B^3*a*d)*m)*n^3 + (A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)*m^3 + 3
*(A*B^2*b*c + A*B^2*a*d)*m^2 + 3*(A*B^2*b*c + A*B^2*a*d)*m)*n^2)*x)*log((b*
x + a)/(d*x + c))^2 + 3*(A^2*B*a*c*m^2 + 2*A^2*B*a*c*m + A^2*B*a*c)*n + (A^
3*b*c + A^3*a*d + (A^3*b*c + A^3*a*d)*m^3 + 6*(B^3*b*c + B^3*a*d)*n^3 + 3*(
A^3*b*c + A^3*a*d)*m^2 + 6*(A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*d)
*m)*n^2 + 3*(A^3*b*c + A^3*a*d)*m + 3*(A^2*B*b*c + A^2*B*a*d + (A^2*B*b*c +
 A^2*B*a*d)*m^2 + 2*(A^2*B*b*c + A^2*B*a*d)*m)*n)*x + 3*(A^2*B*a*c*m^3 + 3*
A^2*B*a*c*m^2 + 3*A^2*B*a*c*m + A^2*B*a*c + 2*(B^3*a*c*m + B^3*a*c)*n^2 + (
A^2*B*b*d*m^3 + 3*A^2*B*b*d*m^2 + 3*A^2*B*b*d*m + A^2*B*b*d + 2*(B^3*b*d*m
+ B^3*b*d)*n^2 + 2*(A*B^2*b*d*m^2 + 2*A*B^2*b*d*m + A*B^2*b*d)*n)*x^2 + ((B
^3*b*d*m^3 + 3*B^3*b*d*m^2 + 3*B^3*b*d*m + B^3*b*d)*n^2*x^2 + (B^3*b*c + B^
3*a*d + (B^3*b*c + B^3*a*d)*m^3 + 3*(B^3*b*c + B^3*a*d)*m^2 + 3*(B^3*b*c +
```

```
B^3*a*d)*m)*n^2*x + (B^3*a*c*m^3 + 3*B^3*a*c*m^2 + 3*B^3*a*c*m + B^3*a*c)*n
^2)*log((b*x + a)/(d*x + c))^2 + 2*(A*B^2*a*c*m^2 + 2*A*B^2*a*c*m + A*B^2*a
*c)*n + (A^2*B*b*c + A^2*B*a*d + (A^2*B*b*c + A^2*B*a*d)*m^3 + 3*(A^2*B*b*c
 + A^2*B*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d + (B^3*b*c + B^3*a*d)*m)*n^2 + 3*(
A^2*B*b*c + A^2*B*a*d)*m + 2*(A*B^2*b*c + A*B^2*a*d + (A*B^2*b*c + A*B^2*a*
d)*m^2 + 2*(A*B^2*b*c + A*B^2*a*d)*m)*n)*x + 2*((B^3*a*c*m^2 + 2*B^3*a*c*m
+ B^3*a*c)*n^2 + ((B^3*b*d*m^2 + 2*B^3*b*d*m + B^3*b*d)*n^2 + (A*B^2*b*d*m^
3 + 3*A*B^2*b*d*m^2 + 3*A*B^2*b*d*m + A*B^2*b*d)*n)*x^2 + (A*B^2*a*c*m^3 +
3*A*B^2*a*c*m^2 + 3*A*B^2*a*c*m + A*B^2*a*c)*n + ((B^3*b*c + B^3*a*d + (B^3
*b*c + B^3*a*d)*m^2 + 2*(B^3*b*c + B^3*a*d)*m)*n^2 + (A*B^2*b*c + A*B^2*a*d
 + (A*B^2*b*c + A*B^2*a*d)*m^3 + 3*(A*B^2*b*c + A*B^2*a*d)*m^2 + 3*(A*B^2*b
*c + A*B^2*a*d)*m)*n)*x)*log((b*x + a)/(d*x + c)))*log(e) + 3*(2*(B^3*a*c*m
 + B^3*a*c)*n^3 + 2*(A*B^2*a*c*m^2 + 2*A*B^2*a*c*m + A*B^2*a*c)*n^2 + (2*(B
^3*b*d*m + B^3*b*d)*n^3 + 2*(A*B^2*b*d*m^2 + 2*A*B^2*b*d*m + A*B^2*b*d)*n^2
 + (A^2*B*b*d*m^3 + 3*A^2*B*b*d*m^2 + 3*A^2*B*b*d*m + A^2*B*b*d)*n)*x^2 + (
A^2*B*a*c*m^3 + 3*A^2*B*a*c*m^2 + 3*A^2*B*a*c*m + A^2*B*a*c)*n + (2*(B^3*b*
c + B^3*a*d + (B^3*b*c + B^3*a*d)*m)*n^3 + 2*(A*B^2*b*c + A*B^2*a*d + (A*B^
2*b*c + A*B^2*a*d)*m^2 + 2*(A*B^2*b*c + A*B^2*a*d)*m)*n^2 + (A^2*B*b*c + A^
2*B*a*d + (A^2*B*b*c + A^2*B*a*d)*m^3 + 3*(A^2*B*b*c + A^2*B*a*d)*m^2 + 3*(
A^2*B*b*c + A^2*B*a*d)*m)*n)*x)*log((b*x + a)/(d*x + c)))*(b*g*x + a*g)^(-m
 - 2)*e^(m*log(b*g*x + a*g) - m*log((b*x + a)/(d*x + c)) + m*log(i/g))/((b*
c - a*d)*m^4 + 4*(b*c - a*d)*m^3 + 6*(b*c - a*d)*m^2 + b*c - a*d + 4*(b*c -
 a*d)*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^3 \left(bgx+ag\right)^{-m-2}(dix+ci)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="giac")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^3*(b*g*x + a*g)^(-m - 2)*(
d*i*x + c*i)^m, x)
```

maple [F] time = 8.71, size = 0, normalized size = 0.00

$$\int \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^3 \left(bgx+ag\right)^{-m-2} (dix+ci)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)
```

```
[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^3 \left(bgx+ag\right)^{-m-2}(dix+ci)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="maxima")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^3*(b*g*x + a*g)^(-m - 2)*(
d*i*x + c*i)^m, x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^m\,\left(A+B\,\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\right)^3}{{\left(a\,g+b\,g\,x\right)}^{m+2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3)/(a*g + b*g*x
)^(m + 2),x)
```

```
[Out] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^3)/(a*g + b*g*x
)^(m + 2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m*(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**3,x)
```

```
[Out] Timed out
```

3.219 $\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$

Optimal. Leaf size=223

$$-\frac{(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2}{i^2(m+1)(c+dx)(bc-ad)}-\frac{2Bn(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(B\,\mathrm{l}\right.}{i^2(m+1)^2(c+dx)(bc-ad)}$$

```
[Out] -2*B^2*n^2*(b*x+a)*(g*(b*x+a))^(-2-m)*(i*(d*x+c))^(2+m)/(-a*d+b*c)/i^2/(1+m
)^3/(d*x+c)-2*B*n*(b*x+a)*(g*(b*x+a))^(-2-m)*(i*(d*x+c))^(2+m)*(A+B*ln(e*((
b*x+a)/(d*x+c))^n))/(-a*d+b*c)/i^2/(1+m)^2/(d*x+c)-(b*x+a)*(g*(b*x+a))^(-2-
m)*(i*(d*x+c))^(2+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2/(-a*d+b*c)/i^2/(1+m)
/(d*x+c)
```

Rubi [F] time = 1.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx$$

Verification is Not applicable to the result.

```
[In] Int[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c + d*x
))^n])^2,x]
```

```
[Out] -((A^2*(a*g + b*g*x)^(-1 - m)*(c*i + d*i*x)^(1 + m))/((b*c - a*d)*g*i*(1 +
m))) - (2*A*B*n*(a*g + b*g*x)^(-1 - m)*(c*i + d*i*x)^(1 + m))/((b*c - a*d)*
g*i*(1 + m)^2) - (2*A*B*(a*g + b*g*x)^(-1 - m)*(c*i + d*i*x)^(1 + m)*Log[e*
((a + b*x)/(c + d*x))^n])/((b*c - a*d)*g*i*(1 + m)) + B^2*Defer[Int][(a*g +
 b*g*x)^(-2 - m)*(c*i + d*i*x)^m*Log[e*((a + b*x)/(c + d*x))^n]^2, x]
```

Rubi steps

$$\begin{aligned}
\int (219c+219dx)^m(ag+bgx)^{-2-m}\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2 dx &= \int \left(A^2(219c+219dx)^m(ag+bgx)^{-2-m}+2A\right. \\
&= A^2\int (219c+219dx)^m(ag+bgx)^{-2-m}\,dx+(\\
&= -\frac{A^2(219c+219dx)^{1+m}(ag+bgx)^{-1-m}}{219(bc-ad)g(1+m)}-\frac{2A}{} \\
&= -\frac{A^2(219c+219dx)^{1+m}(ag+bgx)^{-1-m}}{219(bc-ad)g(1+m)}-\frac{2A}{} \\
&= -\frac{2\,219^m ABn(c+dx)^{1+m}(ag+bgx)^{-1-m}}{(bc-ad)g(1+m)^2}-
\end{aligned}$$

Mathematica [A] time = 2.09, size = 134, normalized size = 0.60

$$-\frac{(c+dx)(g(a+bx))^{-m-1}(i(c+dx))^m\left(2B(m+1)(Am+A+Bn)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+B^2(m+1)^2\log^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+\right.}{g(m+1)^3(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n])^2,x]
```

```
[Out] -(((g*(a + b*x))^(-1 - m)*(c + d*x)*(i*(c + d*x))^m*(A^2*(1 + m)^2 + 2*A*B*
(1 + m)*n + 2*B^2*n^2 + 2*B*(1 + m)*(A + A*m + B*n)*Log[e*((a + b*x)/(c + d
*x))^n] + B^2*(1 + m)^2*Log[e*((a + b*x)/(c + d*x))^n]^2))/((b*c - a*d)*g*(
1 + m)^3))
```

fricas [B] time = 1.03, size = 983, normalized size = 4.41

$$-\frac{\left(A^2acm^2 + 2B^2acn^2 + 2A^2acm + A^2ac + \left(A^2bdm^2 + 2B^2bdn^2 + 2A^2bdm + A^2bd + 2(ABbdm + ABbd)n\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="fricas")
```

```
[Out] -(A^2*a*c*m^2 + 2*B^2*a*c*n^2 + 2*A^2*a*c*m + A^2*a*c + (A^2*b*d*m^2 + 2*B^
2*b*d*n^2 + 2*A^2*b*d*m + A^2*b*d + 2*(A*B*b*d*m + A*B*b*d)*n)*x^2 + (B^2*a
*c*m^2 + 2*B^2*a*c*m + B^2*a*c + (B^2*b*d*m^2 + 2*B^2*b*d*m + B^2*b*d)*x^2
+ (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m^2 + 2*(B^2*b*c + B^2*a*d)*m)*x
)*log(e)^2 + ((B^2*b*d*m^2 + 2*B^2*b*d*m + B^2*b*d)*n^2*x^2 + (B^2*b*c + B^
2*a*d + (B^2*b*c + B^2*a*d)*m^2 + 2*(B^2*b*c + B^2*a*d)*m)*n^2*x + (B^2*a*c
*m^2 + 2*B^2*a*c*m + B^2*a*c)*n^2)*log((b*x + a)/(d*x + c))^2 + 2*(A*B*a*c*
m + A*B*a*c)*n + (A^2*b*c + A^2*a*d + (A^2*b*c + A^2*a*d)*m^2 + 2*(B^2*b*c
+ B^2*a*d)*n^2 + 2*(A^2*b*c + A^2*a*d)*m + 2*(A*B*b*c + A*B*a*d + (A*B*b*c
+ A*B*a*d)*m)*n)*x + 2*(A*B*a*c*m^2 + 2*A*B*a*c*m + A*B*a*c + (A*B*b*d*m^2
+ 2*A*B*b*d*m + A*B*b*d + (B^2*b*d*m + B^2*b*d)*n)*x^2 + (B^2*a*c*m + B^2*a
*c)*n + (A*B*b*c + A*B*a*d + (A*B*b*c + A*B*a*d)*m^2 + 2*(A*B*b*c + A*B*a*d
)*m + (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m)*n)*x + ((B^2*b*d*m^2 + 2*
B^2*b*d*m + B^2*b*d)*n*x^2 + (B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m^2 +
 2*(B^2*b*c + B^2*a*d)*m)*n*x + (B^2*a*c*m^2 + 2*B^2*a*c*m + B^2*a*c)*n)*lo
g((b*x + a)/(d*x + c)))*log(e) + 2*((B^2*a*c*m + B^2*a*c)*n^2 + ((B^2*b*d*m
 + B^2*b*d)*n^2 + (A*B*b*d*m^2 + 2*A*B*b*d*m + A*B*b*d)*n)*x^2 + (A*B*a*c*m
^2 + 2*A*B*a*c*m + A*B*a*c)*n + ((B^2*b*c + B^2*a*d + (B^2*b*c + B^2*a*d)*m
)*n^2 + (A*B*b*c + A*B*a*d + (A*B*b*c + A*B*a*d)*m^2 + 2*(A*B*b*c + A*B*a*d
)*m)*n)*x)*log((b*x + a)/(d*x + c)))*(b*g*x + a*g)^(-m - 2)*e^(m*log(b*g*x
+ a*g) - m*log((b*x + a)/(d*x + c)) + m*log(i/g))/((b*c - a*d)*m^3 + 3*(b*c
 - a*d)*m^2 + b*c - a*d + 3*(b*c - a*d)*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B \log\left(e \left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2 \left(bgx + ag\right)^{-m-2} (dix+ci)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="giac")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^2*(b*g*x + a*g)^(-m - 2)*(
d*i*x + c*i)^m, x)
```

maple [F] time = 7.78, size = 0, normalized size = 0.00

$$\int \left(B \ln\left(e \left(\frac{bx+a}{dx+c}\right)^n\right) + A\right)^2 \left(bgx + ag\right)^{-m-2} (dix+ci)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)^{2}\left(bgx+ag\right)^{-m-2}(dix+ci)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="maxima")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)^2*(b*g*x + a*g)^(-m - 2)*(
d*i*x + c*i)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^{m}\left(A+B\,\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^{n}\right)\right)^{2}}{\left(a\,g+b\,g\,x\right)^{m+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^(m + 2),x)
```

```
[Out] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n))^2)/(a*g + b*g*x
)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m*(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**2,x)
```

```
[Out] Timed out
```

3.220 $\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)\,dx$

Optimal. Leaf size=137

$$-\frac{(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)}{i^2(m+1)(c+dx)(bc-ad)}-\frac{Bn(a+bx)(g(a+bx))^{-m-2}(i(c+dx))^{m+2}}{i^2(m+1)^2(c+dx)(bc-ad)}$$

```
[Out] -B*n*(b*x+a)*(g*(b*x+a))^(-2-m)*(i*(d*x+c))^(2+m)/(-a*d+b*c)/i^2/(1+m)^2/(d
*x+c)-(b*x+a)*(g*(b*x+a))^(-2-m)*(i*(d*x+c))^(2+m)*(A+B*ln(e*((b*x+a)/(d*x+
c))^n))/(-a*d+b*c)/i^2/(1+m)/(d*x+c)
```

Rubi [A] time = 0.62, antiderivative size = 170, normalized size of antiderivative = 1.24, number of steps used = 6, number of rules used = 4, integrand size = 47, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.085, Rules used = {6742, 37, 2554, 12}

$$-\frac{A(ag+bgx)^{-m-1}(ci+dix)^{m+1}}{gi(m+1)(bc-ad)}-\frac{B(ag+bgx)^{-m-1}(ci+dix)^{m+1}\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{gi(m+1)(bc-ad)}-\frac{Bn(ag+bgx)^{-m-1}(ci+dix)^{m}}{gi(m+1)^2(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c + d*x
))^n]),x]
```

```
[Out] -((A*(a*g + b*g*x)^(-1 - m)*(c*i + d*i*x)^(1 + m))/((b*c - a*d)*g*i*(1 + m)
)) - (B*n*(a*g + b*g*x)^(-1 - m)*(c*i + d*i*x)^(1 + m))/((b*c - a*d)*g*i*(1
 + m)^2) - (B*(a*g + b*g*x)^(-1 - m)*(c*i + d*i*x)^(1 + m)*Log[e*((a + b*x)
/(c + d*x))^n])/((b*c - a*d)*g*i*(1 + m))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 2554

```
Int[Log[u_]*(v_), x_Symbol] :> With[{w = IntHide[v, x]}, Dist[Log[u], w, x]
 - Int[SimplifyIntegrand[(w*D[u, x])/u, x], x] /; InverseFunctionFreeQ[w, x
]] /; InverseFunctionFreeQ[u, x]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int (220c+220dx)^m(ag+bgx)^{-2-m}\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)dx = \int \left(A(220c+220dx)^m(ag+bgx)^{-2-m}+B(22\right.$$

$$= A\int (220c+220dx)^m(ag+bgx)^{-2-m}\,dx + B$$

$$= -\frac{A(220c+220dx)^{1+m}(ag+bgx)^{-1-m}}{220(bc-ad)g(1+m)} - \frac{B(22}{}$$

$$= -\frac{A(220c+220dx)^{1+m}(ag+bgx)^{-1-m}}{220(bc-ad)g(1+m)} - \frac{B(22}{}$$

$$= -\frac{220^m Bn(c+dx)^{1+m}(ag+bgx)^{-1-m}}{(bc-ad)g(1+m)^2} - \frac{A(22}{}$$

Mathematica [A] time = 0.53, size = 78, normalized size = 0.57

$$-\frac{(c+dx)(g(a+bx))^{-m-1}(i(c+dx))^m\left(B(m+1)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+Am+A+Bn\right)}{g(m+1)^2(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[e*((a + b*x)/(c
 + d*x))^n]),x]
```

```
[Out] -(((g*(a + b*x))^(-1 - m)*(c + d*x)*(i*(c + d*x))^m*(A + A*m + B*n + B*(1 +
 m)*Log[e*((a + b*x)/(c + d*x))^n]))/((b*c - a*d)*g*(1 + m)^2))
```

fricas [A] time = 1.05, size = 269, normalized size = 1.96

$$-\frac{\left(Aacm + Bacn + Aac + (Abdm + Bbdn + Abd)x^2 + (Abc + Aad + (Abc + Aad)m + (Bbc + Bad)n)x + \left(Bacm\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="fricas")
```

```
[Out] -(A*a*c*m + B*a*c*n + A*a*c + (A*b*d*m + B*b*d*n + A*b*d)*x^2 + (A*b*c + A*
a*d + (A*b*c + A*a*d)*m + (B*b*c + B*a*d)*n)*x + (B*a*c*m + B*a*c + (B*b*d*
m + B*b*d)*x^2 + (B*b*c + B*a*d + (B*b*c + B*a*d)*m)*x)*log(e) + ((B*b*d*m
+ B*b*d)*n*x^2 + (B*b*c + B*a*d + (B*b*c + B*a*d)*m)*n*x + (B*a*c*m + B*a*c
)*n)*log((b*x + a)/(d*x + c)))*(b*g*x + a*g)^(-m - 2)*e^(m*log(b*g*x + a*g)
 - m*log((b*x + a)/(d*x + c)) + m*log(i/g))/((b*c - a*d)*m^2 + b*c - a*d +
2*(b*c - a*d)*m)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)\left(bgx+ag\right)^{-m-2}(dix+ci)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="giac")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)*(b*g*x + a*g)^(-m - 2)*(d*
i*x + c*i)^m, x)
```

maple [F] time = 8.30, size = 0, normalized size = 0.00

$$\int \left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)\left(bgx+ag\right)^{-m-2}(dix+ci)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right)+A\right)\left(bgx+ag\right)^{-m-2}(dix+ci)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="maxima")
```

```
[Out] integrate((B*log(e*((b*x + a)/(d*x + c))^n) + A)*(b*g*x + a*g)^(-m - 2)*(d*
i*x + c*i)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c\,i+d\,i\,x)^{m}\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^{n}\right)\right)}{\left(a\,g+b\,g\,x\right)^{m+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
(m + 2),x)
```

```
[Out] int(((c*i + d*i*x)^m*(A + B*log(e*((a + b*x)/(c + d*x))^n)))/(a*g + b*g*x)^
(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m*(A+B*ln(e*((b*x+a)/(d*x+c))**n
)),x)
```

```
[Out] Timed out
```

3.221 $\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx$

Optimal. Leaf size=128

$$\frac{(a+bx)e^{-\frac{A(m+1)}{Bn}}(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-\frac{m+1}{n}}\text{Ei}\left(-\frac{(m+1)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{Bi^2n(c+dx)(bc-ad)}$$

```
[Out] exp(A*(1+m)/B/n)*(b*x+a)*(g*(b*x+a))^(-2-m)*(e*((b*x+a)/(d*x+c))^n)^((1+m)/
n)*(i*(d*x+c))^(2+m)*Ei(-(1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/B/n)/B/(-a*d
+b*c)/i^2/n/(d*x+c)
```

Rubi [F] time = 0.69, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/(c + d
*x))^n]),x]
```

```
[Out] Defer[Int][((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)
/(c + d*x))^n]), x]
```

Rubi steps

$$\int \frac{(221c+221dx)^m(ag+bgx)^{-2-m}}{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx=\int \frac{(221c+221dx)^m(ag+bgx)^{-2-m}}{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx$$

Mathematica [F] time = 0.25, size = 0, normalized size = 0.00

$$\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/
(c + d*x))^n]),x]
```

```
[Out] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/
(c + d*x))^n]), x]
```

fricas [A] time = 0.82, size = 93, normalized size = 0.73

$$\frac{\text{Ei}\left(-\frac{(Bm+B)n\log\left(\frac{bx+a}{dx+c}\right)+Am+(Bm+B)\log(e)+A}{Bn}\right)e^{\left(\frac{Bmn\log\left(\frac{i}{g}\right)+Am+(Bm+B)\log(e)+A}{Bn}\right)}}{(Bbc-Bad)g^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="fricas")
```

```
[Out] Ei(-((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)/(B*
n))*e^((B*m*n*log(i/g) + A*m + (B*m + B)*log(e) + A)/(B*n))/((B*b*c - B*a*d
)*g^2*n)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^{-m-2}(dix + ci)^m}{B\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="giac")
```

```
[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m/(B*log(e*((b*x + a)/(d*x +
 c))^n) + A), x)
```

maple [F] time = 4.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^{-m-2}(dix + ci)^m}{B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

```
[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^{-m-2}(dix + ci)^m}{B\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right) + A}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))
,x, algorithm="maxima")
```

```
[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m/(B*log(e*((b*x + a)/(d*x +
 c))^n) + A), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c\,i + d\,i\,x)^m}{\left(a\,g + b\,g\,x\right)^{m+2}\,\left(A + B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))),x)
```

```
[Out] int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m/(A+B*ln(e*((b*x+a)/(d*x+c))**n
)),x)
```

```
[Out] Timed out
```

3.222 $\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}\,dx$

Optimal. Leaf size=214

$$-\frac{(m+1)(a+bx)e^{\frac{A(m+1)}{Bn}}(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{m+1}{n}}\text{Ei}\left(-\frac{(m+1)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{B^2i^2n^2(c+dx)(bc-ad)}-\frac{(a+bx}{Bi^2n(c+d}$$

```
[Out] -exp(A*(1+m)/B/n)*(1+m)*(b*x+a)*(g*(b*x+a))^(-2-m)*(e*((b*x+a)/(d*x+c))^n)^
((1+m)/n)*(i*(d*x+c))^(2+m)*Ei(-(1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/B/n)/
B^2/(-a*d+b*c)/i^2/n^2/(d*x+c)-(b*x+a)*(g*(b*x+a))^(-2-m)*(i*(d*x+c))^(2+m)
/B/(-a*d+b*c)/i^2/n/(d*x+c)/(A+B*ln(e*((b*x+a)/(d*x+c))^n))
```

Rubi [F] time = 0.78, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/(c + d
*x))^n])^2,x]
```

```
[Out] Defer[Int][((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)
/(c + d*x))^n])^2, x]
```

Rubi steps

$$\int \frac{(222c+222dx)^m(ag+bgx)^{-2-m}}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}\,dx=\int \frac{(222c+222dx)^m(ag+bgx)^{-2-m}}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}\,dx$$

Mathematica [F] time = 0.27, size = 0, normalized size = 0.00

$$\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/
(c + d*x))^n])^2,x]
```

```
[Out] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/
(c + d*x))^n])^2, x]
```

fricas [A] time = 0.62, size = 284, normalized size = 1.33

$$-\frac{\left(Bbdg^2nx^2+Bacg^2n+(Bbc+Bad)g^2nx\right)\left(bgx+ag\right)^{-m-2}e^{\left(m\log\left(bgx+ag\right)-m\log\left(\frac{bx+a}{dx+c}\right)+m\log\left(\frac{i}{g}\right)\right)}+\left((Bm+B)n\log\right.}{\left(B^3bc-B^3ad\right)g^2n^3\log\left(\frac{bx+a}{dx+c}\right)+\left(B^3bc-B^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="fricas")
```

```
[Out] -((B*b*d*g^2*n*x^2 + B*a*c*g^2*n + (B*b*c + B*a*d)*g^2*n*x)*(b*g*x + a*g)^(
-m - 2)*e^(m*log(b*g*x + a*g) - m*log((b*x + a)/(d*x + c)) + m*log(i/g)) +
((B*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)*Ei(-((B
*m + B)*n*log((b*x + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)/(B*n))*e^(
(B*m*n*log(i/g) + A*m + (B*m + B)*log(e) + A)/(B*n)))/((B^3*b*c - B^3*a*d)*
g^2*n^3*log((b*x + a)/(d*x + c)) + (B^3*b*c - B^3*a*d)*g^2*n^2*log(e) + (A*
B^2*b*c - A*B^2*a*d)*g^2*n^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^{-m-2}(dix + ci)^{m}}{\left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right) + A\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="giac")
```

```
[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m/(B*log(e*((b*x + a)/(d*x +
 c))^n) + A)^2, x)
```

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx + ag\right)^{-m-2}\left(dix + ci\right)^{m}}{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^{n}\right) + A\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

```
[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$i^{m}(m+1)\int -\frac{}{\left(B^{2}b^{2}g^{m+2}nx^{2} + 2\,B^{2}abg^{m+2}nx + B^{2}a^{2}g^{m+2}n\right)(bx+a)^{m}\log\left((bx+a)^{n}\right) - \left(B^{2}b^{2}g^{m+2}nx^{2} + 2\,B^{2}abg\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^2,x, algorithm="maxima")
```

```
[Out] i^m*(m + 1)*integrate(-(d*x + c)^m/((B^2*b^2*g^(m + 2)*n*x^2 + 2*B^2*a*b*g^
(m + 2)*n*x + B^2*a^2*g^(m + 2)*n)*(b*x + a)^m*log((b*x + a)^n) - (B^2*b^2*
g^(m + 2)*n*x^2 + 2*B^2*a*b*g^(m + 2)*n*x + B^2*a^2*g^(m + 2)*n)*(b*x + a)^
m*log((d*x + c)^n) + (B^2*a^2*g^(m + 2)*n*log(e) + A*B*a^2*g^(m + 2)*n + (B
^2*b^2*g^(m + 2)*n*log(e) + A*B*b^2*g^(m + 2)*n)*x^2 + 2*(B^2*a*b*g^(m + 2)
*n*log(e) + A*B*a*b*g^(m + 2)*n)*x)*(b*x + a)^m), x) - (d*i^m*x + c*i^m)*(d
*x + c)^m/(((b^2*c*g^(m + 2)*n - a*b*d*g^(m + 2)*n)*B^2*x + (a*b*c*g^(m + 2
)*n - a^2*d*g^(m + 2)*n)*B^2)*(b*x + a)^m*log((b*x + a)^n) - ((b^2*c*g^(m +
 2)*n - a*b*d*g^(m + 2)*n)*B^2*x + (a*b*c*g^(m + 2)*n - a^2*d*g^(m + 2)*n)*
B^2)*(b*x + a)^m*log((d*x + c)^n) + ((a*b*c*g^(m + 2)*n - a^2*d*g^(m + 2)*n
)*A*B + (a*b*c*g^(m + 2)*n*log(e) - a^2*d*g^(m + 2)*n*log(e))*B^2 + ((b^2*c
```

```
*g^(m + 2)*n - a*b*d*g^(m + 2)*n)*A*B + (b^2*c*g^(m + 2)*n*log(e) - a*b*d*g
^(m + 2)*n*log(e))*B^2)*x)*(b*x + a)^m)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^m}{\left(a\,g+b\,g\,x\right)^{m+2}\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))^2),x)
```

```
[Out] int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m/(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**2,x)
```

```
[Out] Timed out
```

3.223 $\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3}\,dx$

Optimal. Leaf size=306

$$\frac{(m+1)^2(a+bx)e^{\frac{A(m+1)}{Bn}}(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{m+1}{n}}\operatorname{Ei}\left(-\frac{(m+1)\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{Bn}\right)}{2B^3i^2n^3(c+dx)(bc-ad)}+\frac{(m+1)(a+}{2B^2i^2n^2(c+d}$$

```
[Out] 1/2*exp(A*(1+m)/B/n)*(1+m)^2*(b*x+a)*(g*(b*x+a))^(-2-m)*(e*((b*x+a)/(d*x+c)
)^n)^((1+m)/n)*(i*(d*x+c))^(2+m)*Ei(-(1+m)*(A+B*ln(e*((b*x+a)/(d*x+c))^n))/
B/n)/B^3/(-a*d+b*c)/i^2/n^3/(d*x+c)-1/2*(b*x+a)*(g*(b*x+a))^(-2-m)*(i*(d*x+
c))^(2+m)/B/(-a*d+b*c)/i^2/n/(d*x+c)/(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2+1/2*
(1+m)*(b*x+a)*(g*(b*x+a))^(-2-m)*(i*(d*x+c))^(2+m)/B^2/(-a*d+b*c)/i^2/n^2/(
d*x+c)/(A+B*ln(e*((b*x+a)/(d*x+c))^n))
```

Rubi [F] time = 0.76, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/(c + d
*x))^n])^3,x]
```

```
[Out] Defer[Int][((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)
/(c + d*x))^n])^3, x]
```

Rubi steps

$$\int \frac{(223c+223dx)^m(ag+bgx)^{-2-m}}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3}\,dx=\int \frac{(223c+223dx)^m(ag+bgx)^{-2-m}}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3}\,dx$$

Mathematica [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{(ag+bgx)^{-2-m}(ci+dix)^m}{\left(A+B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/
(c + d*x))^n])^3,x]
```

```
[Out] Integrate[((a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m)/(A + B*Log[e*((a + b*x)/
(c + d*x))^n])^3, x]
```

fricas [B] time = 0.93, size = 815, normalized size = 2.66

$$-\frac{\left(B^2acg^2n^2+\left(B^2bdg^2n^2-\left(ABbdg^2m+ABbdg^2\right)n\right)x^2-\left(ABacg^2m+ABacg^2\right)n+\left(\left(B^2bc+B^2ad\right)g^2n^2-\left((\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="fricas")
```

```
[Out] -1/2*((B^2*a*c*g^2*n^2 + (B^2*b*d*g^2*n^2 - (A*B*b*d*g^2*m + A*B*b*d*g^2)*n
)*x^2 - (A*B*a*c*g^2*m + A*B*a*c*g^2)*n + ((B^2*b*c + B^2*a*d)*g^2*n^2 - ((
A*B*b*c + A*B*a*d)*g^2*m + (A*B*b*c + A*B*a*d)*g^2)*n)*x - ((B^2*b*d*g^2*m
+ B^2*b*d*g^2)*n*x^2 + ((B^2*b*c + B^2*a*d)*g^2*m + (B^2*b*c + B^2*a*d)*g^2
)*n*x + (B^2*a*c*g^2*m + B^2*a*c*g^2)*n)*log(e) - ((B^2*b*d*g^2*m + B^2*b*d
*g^2)*n^2*x^2 + ((B^2*b*c + B^2*a*d)*g^2*m + (B^2*b*c + B^2*a*d)*g^2)*n^2*x
 + (B^2*a*c*g^2*m + B^2*a*c*g^2)*n^2)*log((b*x + a)/(d*x + c)))*(b*g*x + a*
g)^(-m - 2)*e^(m*log(b*g*x + a*g) - m*log((b*x + a)/(d*x + c)) + m*log(i/g)
) - ((B^2*m^2 + 2*B^2*m + B^2)*n^2*log((b*x + a)/(d*x + c))^2 + A^2*m^2 + 2
*A^2*m + (B^2*m^2 + 2*B^2*m + B^2)*log(e)^2 + 2*(A*B*m^2 + 2*A*B*m + A*B)*n
*log((b*x + a)/(d*x + c)) + A^2 + 2*(A*B*m^2 + 2*A*B*m + (B^2*m^2 + 2*B^2*m
 + B^2)*n*log((b*x + a)/(d*x + c)) + A*B)*log(e))*Ei(-((B*m + B)*n*log((b*x
 + a)/(d*x + c)) + A*m + (B*m + B)*log(e) + A)/(B*n))*e^((B*m*n*log(i/g) +
A*m + (B*m + B)*log(e) + A)/(B*n)))/((B^5*b*c - B^5*a*d)*g^2*n^5*log((b*x +
 a)/(d*x + c))^2 + (B^5*b*c - B^5*a*d)*g^2*n^3*log(e)^2 + 2*(A*B^4*b*c - A*
B^4*a*d)*g^2*n^4*log((b*x + a)/(d*x + c)) + (A^2*B^3*b*c - A^2*B^3*a*d)*g^2
*n^3 + 2*((B^5*b*c - B^5*a*d)*g^2*n^4*log((b*x + a)/(d*x + c)) + (A*B^4*b*c
 - A*B^4*a*d)*g^2*n^3)*log(e))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{-m-2}(dix+ci)^m}{\left(B\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="giac")
```

```
[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m/(B*log(e*((b*x + a)/(d*x +
 c))^n) + A)^3, x)
```

maple [F(-1)] time = 180.00, size = 0, normalized size = 0.00

$$\int \frac{\left(bgx+ag\right)^{-m-2}(dix+ci)^m}{\left(B\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)+A\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)
```

```
[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m/(B*ln(e*((b*x+a)/(d*x+c))^n)+A)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m/(A+B*log(e*((b*x+a)/(d*x+c))^n))
^3,x, algorithm="maxima")
```

```
[Out] -(m^2 + 2*m + 1)*i^m*integrate(-1/2*(d*x + c)^m/((B^3*b^2*g^(m + 2)*n^2*x^2
 + 2*B^3*a*b*g^(m + 2)*n^2*x + B^3*a^2*g^(m + 2)*n^2)*(b*x + a)^m*log((b*x
+ a)^n) - (B^3*b^2*g^(m + 2)*n^2*x^2 + 2*B^3*a*b*g^(m + 2)*n^2*x + B^3*a^2*
g^(m + 2)*n^2)*(b*x + a)^m*log((d*x + c)^n) + (B^3*a^2*g^(m + 2)*n^2*log(e)
 + A*B^2*a^2*g^(m + 2)*n^2 + (B^3*b^2*g^(m + 2)*n^2*log(e) + A*B^2*b^2*g^(m
 + 2)*n^2)*x^2 + 2*(B^3*a*b*g^(m + 2)*n^2*log(e) + A*B^2*a*b*g^(m + 2)*n^2)
*x)*(b*x + a)^m), x) + 1/2*((B*d*i^m*(m + 1)*x + B*c*i^m*(m + 1))*(d*x + c)
^m*log((b*x + a)^n) - (B*d*i^m*(m + 1)*x + B*c*i^m*(m + 1))*(d*x + c)^m*log
((d*x + c)^n) + (A*c*i^m*(m + 1) + (i^m*(m + 1)*log(e) - i^m*n)*B*c + (A*d*
i^m*(m + 1) + (i^m*(m + 1)*log(e) - i^m*n)*B*d)*x)*(d*x + c)^m)/(((b^2*c*g^
(m + 2)*n^2 - a*b*d*g^(m + 2)*n^2)*B^4*x + (a*b*c*g^(m + 2)*n^2 - a^2*d*g^(
m + 2)*n^2)*B^4)*(b*x + a)^m*log((b*x + a)^n)^2 + ((b^2*c*g^(m + 2)*n^2 - a
*b*d*g^(m + 2)*n^2)*B^4*x + (a*b*c*g^(m + 2)*n^2 - a^2*d*g^(m + 2)*n^2)*B^4
)*(b*x + a)^m*log((d*x + c)^n)^2 + 2*((a*b*c*g^(m + 2)*n^2 - a^2*d*g^(m + 2
)*n^2)*A*B^3 + (a*b*c*g^(m + 2)*n^2*log(e) - a^2*d*g^(m + 2)*n^2*log(e))*B^
4 + ((b^2*c*g^(m + 2)*n^2 - a*b*d*g^(m + 2)*n^2)*A*B^3 + (b^2*c*g^(m + 2)*n
^2*log(e) - a*b*d*g^(m + 2)*n^2*log(e))*B^4)*x)*(b*x + a)^m*log((b*x + a)^n
) + ((a*b*c*g^(m + 2)*n^2 - a^2*d*g^(m + 2)*n^2)*A^2*B^2 + 2*(a*b*c*g^(m +
2)*n^2*log(e) - a^2*d*g^(m + 2)*n^2*log(e))*A*B^3 + (a*b*c*g^(m + 2)*n^2*lo
g(e)^2 - a^2*d*g^(m + 2)*n^2*log(e)^2)*B^4 + ((b^2*c*g^(m + 2)*n^2 - a*b*d*
g^(m + 2)*n^2)*A^2*B^2 + 2*(b^2*c*g^(m + 2)*n^2*log(e) - a*b*d*g^(m + 2)*n^
2*log(e))*A*B^3 + (b^2*c*g^(m + 2)*n^2*log(e)^2 - a*b*d*g^(m + 2)*n^2*log(e
)^2)*B^4)*x)*(b*x + a)^m - 2*(((b^2*c*g^(m + 2)*n^2 - a*b*d*g^(m + 2)*n^2)*
B^4*x + (a*b*c*g^(m + 2)*n^2 - a^2*d*g^(m + 2)*n^2)*B^4)*(b*x + a)^m*log((b
*x + a)^n) + ((a*b*c*g^(m + 2)*n^2 - a^2*d*g^(m + 2)*n^2)*A*B^3 + (a*b*c*g^
(m + 2)*n^2*log(e) - a^2*d*g^(m + 2)*n^2*log(e))*B^4 + ((b^2*c*g^(m + 2)*n^
2 - a*b*d*g^(m + 2)*n^2)*A*B^3 + (b^2*c*g^(m + 2)*n^2*log(e) - a*b*d*g^(m +
 2)*n^2*log(e))*B^4)*x)*(b*x + a)^m)*log((d*x + c)^n))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c\,i+d\,i\,x)^m}{\left(a\,g+b\,g\,x\right)^{m+2}\,\left(A+B\,\ln\left(e\,\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))^3),x)
```

```
[Out] int((c*i + d*i*x)^m/((a*g + b*g*x)^(m + 2)*(A + B*log(e*((a + b*x)/(c + d*x
))^n))^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m/(A+B*ln(e*((b*x+a)/(d*x+c))**n
))**3,x)
```

```
[Out] Timed out
```

3.224 $\int \frac{\log^p\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=41

$$\frac{\log^{p+1}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n(p+1)(bc-ad)}$$

```
[Out] ln(e*((b*x+a)/(d*x+c))^n)^(1+p)/(-a*d+b*c)/n/(1+p)
```

Rubi [A] time = 0.11, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.029$, Rules used = {2505}

$$\frac{\log^{p+1}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n(p+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[Log[e*((a + b*x)/(c + d*x))^n]^p/((a + b*x)*(c + d*x)),x]
```

```
[Out] Log[e*((a + b*x)/(c + d*x))^n]^(1 + p)/((b*c - a*d)*n*(1 + p))
```

Rule 2505

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{h = Simplify[u*(a + b*x)*(c + d*x)]}
, Simp[(h*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c -
 a*d)), x] /; FreeQ[h, x]] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && N
eQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]
```

Rubi steps

$$\int \frac{\log^p\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(a+bx)(c+dx)}\,dx = \frac{\log^{1+p}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(bc-ad)n(1+p)}$$

Mathematica [A] time = 0.03, size = 40, normalized size = 0.98

$$\frac{\log^{p+1}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(p+1)(bcn-adn)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[e*((a + b*x)/(c + d*x))^n]^p/((a + b*x)*(c + d*x)),x]
```

```
[Out] Log[e*((a + b*x)/(c + d*x))^n]^(1 + p)/((b*c*n - a*d*n)*(1 + p))
```

fricas [A] time = 0.69, size = 65, normalized size = 1.59

$$\frac{\left(n\log\left(\frac{bx+a}{dx+c}\right)+\log(e)\right)\left(n\log\left(\frac{bx+a}{dx+c}\right)+\log(e)\right)^p}{(bc-ad)np+(bc-ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(b*x+a)/(d*x+c),x, algorithm="fricas
")
```

```
[Out] (n*log((b*x + a)/(d*x + c)) + log(e))*(n*log((b*x + a)/(d*x + c)) + log(e))
^p/((b*c - a*d)*n*p + (b*c - a*d)*n)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(b*x+a)/(d*x+c),x, algorithm="giac")
```

```
[Out] integrate(log(e*((b*x + a)/(d*x + c))^n)^p/((b*x + a)*(d*x + c)), x)
```

maple [F] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{(bx+a)\,(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*((b*x+a)/(d*x+c))^n)^p/(b*x+a)/(d*x+c),x)
```

```
[Out] int(ln(e*((b*x+a)/(d*x+c))^n)^p/(b*x+a)/(d*x+c),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(b*x+a)/(d*x+c),x, algorithm="maxima
")
```

```
[Out] integrate(log(e*((b*x + a)/(d*x + c))^n)^p/((b*x + a)*(d*x + c)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^p}{(a+b\,x)\,(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*((a + b*x)/(c + d*x))^n)^p/((a + b*x)*(c + d*x)),x)
```

```
[Out] int(log(e*((a + b*x)/(c + d*x))^n)^p/((a + b*x)*(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*((b*x+a)/(d*x+c))**n)**p/(b*x+a)/(d*x+c),x)
```

```
[Out] Timed out
```

3.225 $\int \frac{\log^p\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{ac+(bc+ad)x+bdx^2}\,dx$

Optimal. Leaf size=41

$$\frac{\log^{p+1}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n(p+1)(bc-ad)}$$

```
[Out] ln(e*((b*x+a)/(d*x+c))^n)^(1+p)/(-a*d+b*c)/n/(1+p)
```

Rubi [A] time = 0.04, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.024, Rules used = {2505}

$$\frac{\log^{p+1}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n(p+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[Log[e*((a + b*x)/(c + d*x))^n]^p/(a*c + (b*c + a*d)*x + b*d*x^2),x]
```

```
[Out] Log[e*((a + b*x)/(c + d*x))^n]^(1 + p)/((b*c - a*d)*n*(1 + p))
```

Rule 2505

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{h = Simplify[u*(a + b*x)*(c + d*x)]}
, Simp[(h*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s + 1))/(p*r*(s + 1)*(b*c -
 a*d)), x] /; FreeQ[h, x]] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && N
eQ[b*c - a*d, 0] && EqQ[p + q, 0] && NeQ[s, -1]
```

Rubi steps

$$\int \frac{\log^p\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{ac+(bc+ad)x+bdx^2}\,dx = \frac{\log^{1+p}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(bc-ad)n(1+p)}$$

Mathematica [A] time = 0.01, size = 40, normalized size = 0.98

$$\frac{\log^{p+1}\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{(p+1)(bcn-adn)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[e*((a + b*x)/(c + d*x))^n]^p/(a*c + (b*c + a*d)*x + b*d*x^2),
x]
```

```
[Out] Log[e*((a + b*x)/(c + d*x))^n]^(1 + p)/((b*c*n - a*d*n)*(1 + p))
```

fricas [A] time = 1.23, size = 65, normalized size = 1.59

$$\frac{\left(n\log\left(\frac{bx+a}{dx+c}\right)+\log(e)\right)\left(n\log\left(\frac{bx+a}{dx+c}\right)+\log(e)\right)^p}{(bc-ad)np+(bc-ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(a*c+(a*d+b*c)*x+b*d*x^2),x, algorit
hm="fricas")
```

```
[Out] (n*log((b*x + a)/(d*x + c)) + log(e))*(n*log((b*x + a)/(d*x + c)) + log(e))
^p/((b*c - a*d)*n*p + (b*c - a*d)*n)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{bdx^2 + ac + (bc + ad)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(a*c+(a*d+b*c)*x+b*d*x^2),x, algorit
hm="giac")
```

```
[Out] integrate(log(e*((b*x + a)/(d*x + c))^n)^p/(b*d*x^2 + a*c + (b*c + a*d)*x),
 x)
```

maple [F] time = 0.86, size = 0, normalized size = 0.00

$$\int \frac{\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{bd\,x^2 + ac + (ad + bc)\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(e*((b*x+a)/(d*x+c))^n)^p/(b*d*x^2+a*c+(a*d+b*c)*x),x)
```

```
[Out] int(ln(e*((b*x+a)/(d*x+c))^n)^p/(b*d*x^2+a*c+(a*d+b*c)*x),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)^p}{bdx^2 + ac + (bc + ad)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log(e*((b*x+a)/(d*x+c))^n)^p/(a*c+(a*d+b*c)*x+b*d*x^2),x, algorit
hm="maxima")
```

```
[Out] integrate(log(e*((b*x + a)/(d*x + c))^n)^p/(b*d*x^2 + a*c + (b*c + a*d)*x),
 x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)^p}{b\,d\,x^2 + (a\,d + b\,c)\,x + a\,c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(e*((a + b*x)/(c + d*x))^n)^p/(a*c + x*(a*d + b*c) + b*d*x^2),x)
```

```
[Out] int(log(e*((a + b*x)/(c + d*x))^n)^p/(a*c + x*(a*d + b*c) + b*d*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(e*((b*x+a)/(d*x+c))**n)**p/(a*c+(a*d+b*c)*x+b*d*x**2),x)
```

```
[Out] Timed out
```

3.226 $\int (ag+bgx)^m(ci+dix)^{-2-m}\left(A+B\log\left(e(a+bx)^n(c+dx\right.\right.$

Optimal. Leaf size=193

$$\frac{(a+bx)e^{-\frac{A(m+1)}{Bn}}(g(a+bx))^m(i(c+dx))^{-m}\left(e(a+bx)^n(c+dx)^{-n}\right)^{-\frac{m+1}{n}}\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^p\left(-\frac{(m+1)(\right.}{i^2(m+1)(c+dx)(bc-ad)}$$

```
[Out] (b*x+a)*(g*(b*x+a))^m*GAMMA(1+p,-(1+m)*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/B/
n)*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(-a*d+b*c)/exp(A*(1+m)/B/n)/i^2/(1+m
)/(d*x+c)/((i*(d*x+c))^m)/((e*(b*x+a)^n/((d*x+c)^n))^((1+m)/n))/((-(1+m)*(A
+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/B/n)^p)
```

Rubi [F] time = 0.81, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (ag+bgx)^m(ci+dix)^{-2-m}\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^p\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[(e*(a + b*x)^n)/(c +
d*x)^n])^p,x]
```

```
[Out] Defer[Int][(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[(e*(a + b*x)^n
)/(c + d*x)^n])^p, x]
```

Rubi steps

$$\int (226c+226dx)^{-2-m}(ag+bgx)^m\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^p\,dx=\int (226c+226dx)^{-2-m}(ag+bgx)^m\left(\right.$$

Mathematica [F] time = 0.45, size = 0, normalized size = 0.00

$$\int (ag+bgx)^m(ci+dix)^{-2-m}\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^p\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[(e*(a + b*x)^n)
/(c + d*x)^n])^p,x]
```

```
[Out] Integrate[(a*g + b*g*x)^m*(c*i + d*i*x)^(-2 - m)*(A + B*Log[(e*(a + b*x)^n)
/(c + d*x)^n])^p, x]
```

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(bgx+ag\right)^m(dix+ci)^{-m-2}\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A\right)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)
))^p,x, algorithm="fricas")
```

```
[Out] integral((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)*(B*log((b*x + a)^n*e/(d*x +
 c)^n) + A)^p, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)
))^p,x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Simplification assuming c near 0Simplification assuming c
 near 0Simplification assuming t_nostep near 0Simplification assuming t_nos
tep near 0Simplification assuming a near 0Simplification assuming a near 0S
implification assuming c near 0Simplification assuming c near 0Simplificati
on assuming c near 0Simplification assuming c near 0Simplification assuming
 t_nostep near 0Simplification assuming t_nostep near 0Simplification assum
ing a near 0Simplification assuming a near 0Simplification assuming c near
0Simplification assuming c near 0Simplification assuming c near 0Simplifica
tion assuming c near 0Simplification assuming x near 0Simplification assumi
ng x near 0Simplification assuming a near 0Simplification assuming a near 0
Simplification assuming c near 0Simplification assuming c near 0Unable to d
ivide, perhaps due to rounding error%%%{1,[0,0,5,5,0,2,2,3,3,0,0,2]%%%}+%%%
{-2,[0,0,5,4,1,3,1,3,3,0,0,2]%%%}+%%%{1,[0,0,5,3,2,4,0,3,3,0,0,2]%%%}+%%%{2
,[0,0,4,5,0,1,3,3,3,0,0,2]%%%}+%%%{-1,[0,0,4,4,1,2,2,3,3,0,0,2]%%%}+%%%{-4,
[0,0,4,3,2,3,1,3,3,0,0,2]%%%}+%%%{3,[0,0,4,2,3,4,0,3,3,0,0,2]%%%}+%%%{1,[0,
0,3,5,0,0,4,3,3,0,0,2]%%%}+%%%{4,[0,0,3,4,1,1,3,3,3,0,0,2]%%%}+%%%{-8,[0,0,
3,3,2,2,2,3,3,0,0,2]%%%}+%%%{3,[0,0,3,1,4,4,0,3,3,0,0,2]%%%}+%%%{3,[0,0,2,4
,1,0,4,3,3,0,0,2]%%%}+%%%{-8,[0,0,2,2,3,2,2,3,3,0,0,2]%%%}+%%%{4,[0,0,2,1,4
,3,1,3,3,0,0,2]%%%}+%%%{1,[0,0,2,0,5,4,0,3,3,0,0,2]%%%}+%%%{3,[0,0,1,3,2,0,
4,3,3,0,0,2]%%%}+%%%{-4,[0,0,1,2,3,1,3,3,3,0,0,2]%%%}+%%%{-1,[0,0,1,1,4,2,2
,3,3,0,0,2]%%%}+%%%{2,[0,0,1,0,5,3,1,3,3,0,0,2]%%%}+%%%{1,[0,0,0,2,3,0,4,3,
3,0,0,2]%%%}+%%%{-2,[0,0,0,1,4,1,3,3,3,0,0,2]%%%}+%%%{1,[0,0,0,0,5,2,2,3,3,
0,0,2]%%%} / %%%{1,[0,0,6,5,0,3,2,3,3,0,0,2]%%%}+%%%{-2,[0,0,6,4,1,4,1,3,3,
0,0,2]%%%}+%%%{1,[0,0,6,3,2,5,0,3,3,0,0,2]%%%}+%%%{3,[0,0,5,5,0,2,3,3,3,0,0
,2]%%%}+%%%{-3,[0,0,5,4,1,3,2,3,3,0,0,2]%%%}+%%%{-3,[0,0,5,3,2,4,1,3,3,0,0,
2]%%%}+%%%{3,[0,0,5,2,3,5,0,3,3,0,0,2]%%%}+%%%{3,[0,0,4,5,0,1,4,3,3,0,0,2]%
%%}+%%%{3,[0,0,4,4,1,2,3,3,3,0,0,2]%%%}+%%%{-12,[0,0,4,3,2,3,2,3,3,0,0,2]%%
%}+%%%{3,[0,0,4,2,3,4,1,3,3,0,0,2]%%%}+%%%{3,[0,0,4,1,4,5,0,3,3,0,0,2]%%%}+
%%%{1,[0,0,3,5,0,0,5,3,3,0,0,2]%%%}+%%%{7,[0,0,3,4,1,1,4,3,3,0,0,2]%%%}+%%%
{-8,[0,0,3,3,2,2,3,3,3,0,0,2]%%%}+%%%{-8,[0,0,3,2,3,3,2,3,3,0,0,2]%%%}+%%%{
7,[0,0,3,1,4,4,1,3,3,0,0,2]%%%}+%%%{1,[0,0,3,0,5,5,0,3,3,0,0,2]%%%}+%%%{3,[
0,0,2,4,1,0,5,3,3,0,0,2]%%%}+%%%{3,[0,0,2,3,2,1,4,3,3,0,0,2]%%%}+%%%{-12,[0
,0,2,2,3,2,3,3,3,0,0,2]%%%}+%%%{3,[0,0,2,1,4,3,2,3,3,0,0,2]%%%}+%%%{3,[0,0,
2,0,5,4,1,3,3,0,0,2]%%%}+%%%{3,[0,0,1,3,2,0,5,3,3,0,0,2]%%%}+%%%{-3,[0,0,1,
2,3,1,4,3,3,0,0,2]%%%}+%%%{-3,[0,0,1,1,4,2,3,3,3,0,0,2]%%%}+%%%{3,[0,0,1,0,
5,3,2,3,3,0,0,2]%%%}+%%%{1,[0,0,0,2,3,0,5,3,3,0,0,2]%%%}+%%%{-2,[0,0,0,1,4,
1,4,3,3,0,0,2]%%%}+%%%{1,[0,0,0,0,5,2,3,3,3,0,0,2]%%%} Error: Bad Argument
Value
```

maple [F] time = 3.35, size = 0, normalized size = 0.00

$$\int \left(B\ln\left(e\,(bx+a)^{n}\,(dx+c)^{-n}\right)+A\right)^{p}\left(bgx+ag\right)^{m}(dix+ci)^{-m-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p,x)
```

```
[Out] int((b*g*x+a*g)^m*(d*i*x+c*i)^(-m-2)*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{m}(dix+ci)^{-m-2}\left(B\log\left(\frac{(bx+a)^{n}e}{(dx+c)^{n}}\right)+A\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^m*(d*i*x+c*i)^(-2-m)*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)
))^p,x, algorithm="maxima")
```

```
[Out] integrate((b*g*x + a*g)^m*(d*i*x + c*i)^(-m - 2)*(B*log((b*x + a)^n*e/(d*x
+ c)^n) + A)^p, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a\,g+b\,g\,x\right)^m\,\left(A+B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)\right)^p}{{\left(c\,i+d\,i\,x\right)}^{m+2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*g + b*g*x)^m*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p)/(c*i + d*i
*x)^(m + 2),x)
```

```
[Out] int(((a*g + b*g*x)^m*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p)/(c*i + d*i
*x)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**m*(d*i*x+c*i)**(-2-m)*(A+B*ln(e*(b*x+a)**n/((d*x+c)*
*n)))**p,x)
```

```
[Out] Timed out
```

3.227 $\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A + B\log\left(e(a+bx)^n(c+\right.\right.$

Optimal. Leaf size=194

$$-\frac{(a+bx)e^{\frac{A(m+1)}{Bn}}(g(a+bx))^{-m-2}(i(c+dx))^{m+2}\left(e(a+bx)^n(c+dx)^{-n}\right)^{\frac{m+1}{n}}\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^p\left(\right.}{i^2(m+1)(c+dx)(bc-ad)}$$

```
[Out] -exp(A*(1+m)/B/n)*(b*x+a)*(g*(b*x+a))^(-2-m)*(i*(d*x+c))^(2+m)*(e*(b*x+a)^n
/((d*x+c)^n))^((1+m)/n)*GAMMA(1+p,(1+m)*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/B
/n)*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(-a*d+b*c)/i^2/(1+m)/(d*x+c)/(((1+m
)*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/B/n)^p)
```

Rubi [F] time = 0.71, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^p\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[(e*(a + b*x)^n)/(c +
d*x)^n])^p,x]
```

```
[Out] Defer[Int][(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[(e*(a + b*x)^n
)/(c + d*x)^n])^p, x]
```

Rubi steps

$$\int (227c+227dx)^m(ag+bgx)^{-2-m}\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^p\,dx = \int (227c+227dx)^m(ag+bgx)^{-2-}$$

Mathematica [F] time = 0.41, size = 0, normalized size = 0.00

$$\int (ag+bgx)^{-2-m}(ci+dix)^m \left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^p\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[(e*(a + b*x)^n)
/(c + d*x)^n])^p,x]
```

```
[Out] Integrate[(a*g + b*g*x)^(-2 - m)*(c*i + d*i*x)^m*(A + B*Log[(e*(a + b*x)^n)
/(c + d*x)^n])^p, x]
```

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\left(bgx+ag\right)^{-m-2}(dix+ci)^m\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A\right)^p, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)
))^p,x, algorithm="fricas")
```

```
[Out] integral((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m*(B*log((b*x + a)^n*e/(d*x +
 c)^n) + A)^p, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)
))^p,x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Simplification assuming c near 0Simplification assuming c
 near 0Simplification assuming t_nostep near 0Simplification assuming t_nos
tep near 0Simplification assuming a near 0Simplification assuming a near 0S
implification assuming c near 0Simplification assuming c near 0Simplificati
on assuming c near 0Simplification assuming c near 0Simplification assuming
 t_nostep near 0Simplification assuming t_nostep near 0Simplification assum
ing a near 0Simplification assuming a near 0Simplification assuming c near
0Simplification assuming c near 0Simplification assuming c near 0Simplifica
tion assuming c near 0Simplification assuming x near 0Simplification assumi
ng x near 0Simplification assuming a near 0Simplification assuming a near 0
Simplification assuming c near 0Simplification assuming c near 0Unable to d
ivide, perhaps due to rounding error%%%{1,[0,0,5,5,0,2,2,3,3,0,0,2]%%%}+%%%
{-2,[0,0,5,4,1,3,1,3,3,0,0,2]%%%}+%%%{1,[0,0,5,3,2,4,0,3,3,0,0,2]%%%}+%%%{2
,[0,0,4,5,0,1,3,3,3,0,0,2]%%%}+%%%{-1,[0,0,4,4,1,2,2,3,3,0,0,2]%%%}+%%%{-4,
[0,0,4,3,2,3,1,3,3,0,0,2]%%%}+%%%{3,[0,0,4,2,3,4,0,3,3,0,0,2]%%%}+%%%{1,[0,
0,3,5,0,0,4,3,3,0,0,2]%%%}+%%%{4,[0,0,3,4,1,1,3,3,3,0,0,2]%%%}+%%%{-8,[0,0,
3,3,2,2,2,3,3,0,0,2]%%%}+%%%{3,[0,0,3,1,4,4,0,3,3,0,0,2]%%%}+%%%{3,[0,0,2,4
,1,0,4,3,3,0,0,2]%%%}+%%%{-8,[0,0,2,2,3,2,2,3,3,0,0,2]%%%}+%%%{4,[0,0,2,1,4
,3,1,3,3,0,0,2]%%%}+%%%{1,[0,0,2,0,5,4,0,3,3,0,0,2]%%%}+%%%{3,[0,0,1,3,2,0,
4,3,3,0,0,2]%%%}+%%%{-4,[0,0,1,2,3,1,3,3,3,0,0,2]%%%}+%%%{-1,[0,0,1,1,4,2,2
,3,3,0,0,2]%%%}+%%%{2,[0,0,1,0,5,3,1,3,3,0,0,2]%%%}+%%%{1,[0,0,0,2,3,0,4,3,
3,0,0,2]%%%}+%%%{-2,[0,0,0,1,4,1,3,3,3,0,0,2]%%%}+%%%{1,[0,0,0,0,5,2,2,3,3,
0,0,2]%%%} / %%%{1,[0,0,6,5,0,3,2,3,3,0,0,2]%%%}+%%%{-2,[0,0,6,4,1,4,1,3,3,
0,0,2]%%%}+%%%{1,[0,0,6,3,2,5,0,3,3,0,0,2]%%%}+%%%{3,[0,0,5,5,0,2,3,3,3,0,0
,2]%%%}+%%%{-3,[0,0,5,4,1,3,2,3,3,0,0,2]%%%}+%%%{-3,[0,0,5,3,2,4,1,3,3,0,0,
2]%%%}+%%%{3,[0,0,5,2,3,5,0,3,3,0,0,2]%%%}+%%%{3,[0,0,4,5,0,1,4,3,3,0,0,2]%
%%}+%%%{3,[0,0,4,4,1,2,3,3,3,0,0,2]%%%}+%%%{-12,[0,0,4,3,2,3,2,3,3,0,0,2]%%
%}+%%%{3,[0,0,4,2,3,4,1,3,3,0,0,2]%%%}+%%%{3,[0,0,4,1,4,5,0,3,3,0,0,2]%%%}+
%%%{1,[0,0,3,5,0,0,5,3,3,0,0,2]%%%}+%%%{7,[0,0,3,4,1,1,4,3,3,0,0,2]%%%}+%%%
{-8,[0,0,3,3,2,2,3,3,3,0,0,2]%%%}+%%%{-8,[0,0,3,2,3,3,2,3,3,0,0,2]%%%}+%%%{
7,[0,0,3,1,4,4,1,3,3,0,0,2]%%%}+%%%{1,[0,0,3,0,5,5,0,3,3,0,0,2]%%%}+%%%{3,[
0,0,2,4,1,0,5,3,3,0,0,2]%%%}+%%%{3,[0,0,2,3,2,1,4,3,3,0,0,2]%%%}+%%%{-12,[0
,0,2,2,3,2,3,3,3,0,0,2]%%%}+%%%{3,[0,0,2,1,4,3,2,3,3,0,0,2]%%%}+%%%{3,[0,0,
2,0,5,4,1,3,3,0,0,2]%%%}+%%%{3,[0,0,1,3,2,0,5,3,3,0,0,2]%%%}+%%%{-3,[0,0,1,
2,3,1,4,3,3,0,0,2]%%%}+%%%{-3,[0,0,1,1,4,2,3,3,3,0,0,2]%%%}+%%%{3,[0,0,1,0,
5,3,2,3,3,0,0,2]%%%}+%%%{1,[0,0,0,2,3,0,5,3,3,0,0,2]%%%}+%%%{-2,[0,0,0,1,4,
1,4,3,3,0,0,2]%%%}+%%%{1,[0,0,0,0,5,2,3,3,3,0,0,2]%%%} Error: Bad Argument
Value
```

maple [F] time = 3.24, size = 0, normalized size = 0.00

$$\int \left(B\ln\left(e\left(bx+a\right)^{n}\left(dx+c\right)^{-n}\right)+A\right)^{p}\left(bgx+ag\right)^{-m-2}\left(dix+ci\right)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p,x)
```

```
[Out] int((b*g*x+a*g)^(-m-2)*(d*i*x+c*i)^m*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(bgx+ag\right)^{-m-2}\left(dix+ci\right)^{m}\left(B\log\left(\frac{\left(bx+a\right)^{n}e}{\left(dx+c\right)^{n}}\right)+A\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)^(-2-m)*(d*i*x+c*i)^m*(A+B*log(e*(b*x+a)^n/((d*x+c)^n)
))^p,x, algorithm="maxima")
```

```
[Out] integrate((b*g*x + a*g)^(-m - 2)*(d*i*x + c*i)^m*(B*log((b*x + a)^n*e/(d*x
+ c)^n) + A)^p, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c\,i+d\,i\,x)^m\,\left(A+B\,\ln\left(\frac{e\,(a+b\,x)^n}{(c+d\,x)^n}\right)\right)^p}{{\left(a\,g+b\,g\,x\right)}^{m+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((c*i + d*i*x)^m*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p)/(a*g + b*g
*x)^(m + 2),x)
```

```
[Out] int(((c*i + d*i*x)^m*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p)/(a*g + b*g
*x)^(m + 2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*g*x+a*g)**(-2-m)*(d*i*x+c*i)**m*(A+B*ln(e*(b*x+a)**n/((d*x+c)*
*n)))**p,x)
```

```
[Out] Timed out
```

3.228 $\int \frac{\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^3}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=45

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^4}{4Bn(bc-ad)}$$

```
[Out] 1/4*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^4/B/(-a*d+b*c)/n
```

Rubi [A] time = 0.12, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.025, Rules used = {6686}

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^4}{4Bn(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/((a + b*x)*(c + d*x)),x]
```

```
[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^4/(4*B*(b*c - a*d)*n)
```

Rule 6686

```
Int[(u_)*(y_)^(m_.), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Si
mp[(q*y^(m + 1))/(m + 1), x] /;  !FalseQ[q]] /; FreeQ[m, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^3}{(a+bx)(c+dx)}\,dx=\frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^4}{4B(bc-ad)n}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.96

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^4}{4(bBcn-aBdn)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/((a + b*x)*(c + d*x)),
x]
```

```
[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^4/(4*(b*B*c*n - a*B*d*n))
```

fricas [B] time = 0.80, size = 375, normalized size = 8.33

$$B^3n^3\log(bx+a)^4+B^3n^3\log(dx+c)^4+4\left(B^3n^2\log(e)+AB^2n^2\right)\log(bx+a)^3-4\left(B^3n^3\log(bx+a)+B^3n^2\mathrm{lo}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(b*x+a)/(d*x+c),x, algorithm
="fricas")
```

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

```
2*n^2)*log(d*x + c)^3 + 6*(B^3*n*log(e)^2 + 2*A*B^2*n*log(e) + A^2*B*n)*log
(b*x + a)^2 + 6*(B^3*n^3*log(b*x + a)^2 + B^3*n*log(e)^2 + 2*A*B^2*n*log(e)
 + A^2*B*n + 2*(B^3*n^2*log(e) + A*B^2*n^2)*log(b*x + a))*log(d*x + c)^2 +
4*(B^3*log(e)^3 + 3*A*B^2*log(e)^2 + 3*A^2*B*log(e) + A^3)*log(b*x + a) - 4
*(B^3*n^3*log(b*x + a)^3 + B^3*log(e)^3 + 3*A*B^2*log(e)^2 + 3*A^2*B*log(e)
 + A^3 + 3*(B^3*n^2*log(e) + A*B^2*n^2)*log(b*x + a)^2 + 3*(B^3*n*log(e)^2
+ 2*A*B^2*n*log(e) + A^2*B*n)*log(b*x + a))*log(d*x + c))/(b*c - a*d)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A\right)^3}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(b*x+a)/(d*x+c),x, algorithm
="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^3/((b*x + a)*(d*x + c)), x
)
```

maple [C] time = 35.35, size = 64288, normalized size = 1428.62

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/(b*x+a)/(d*x+c),x)
```

```
[Out] result too large to display
```

maxima [B] time = 1.78, size = 766, normalized size = 17.02

$$B^3\left(\frac{\log(bx+a)}{bc-ad}-\frac{\log(dx+c)}{bc-ad}\right)\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^3+3\,AB^2\left(\frac{\log(bx+a)}{bc-ad}-\frac{\log(dx+c)}{bc-ad}\right)\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^2+3\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(b*x+a)/(d*x+c),x, algorithm
="maxima")
```

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

mupad [B] time = 5.75, size = 141, normalized size = 3.13

$$-\frac{\frac{3\,A^2\,B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)^2}{2}+A\,B^2\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)^3+\frac{B^3\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)^4}{4}}{n\,\left(a\,d-b\,c\right)}+\frac{A^3\,\mathrm{atan}\left(\frac{a\,d\,1{}\mathrm{i}+b\,c\,1{}\mathrm{i}+b\,d\,x\,2{}\mathrm{i}}{a\,d-b\,c}\right)\,2{}\mathrm{i}}{a\,d-b\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3/((a + b*x)*(c + d*x)),x)
```

```
[Out] (A^3*atan((a*d*1i + b*c*1i + b*d*x*2i)/(a*d - b*c))*2i)/(a*d - b*c) - ((B^3
*log((e*(a + b*x)^n)/(c + d*x)^n)^4)/4 + (3*A^2*B*log((e*(a + b*x)^n)/(c +
d*x)^n)^2)/2 + A*B^2*log((e*(a + b*x)^n)/(c + d*x)^n)^3)/(n*(a*d - b*c))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**3/(b*x+a)/(d*x+c),x)
```

```
[Out] Timed out
```

3.229 $\int \frac{\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^2}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=45

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^3}{3Bn(bc-ad)}$$

```
[Out] 1/3*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/B/(-a*d+b*c)/n
```

Rubi [A] time = 0.11, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.025, Rules used = {6686}

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^3}{3Bn(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/((a + b*x)*(c + d*x)),x]
```

```
[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/(3*B*(b*c - a*d)*n)
```

Rule 6686

```
Int[(u_)*(y_)^(m_.), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Si
mp[(q*y^(m + 1))/(m + 1), x] /;  !FalseQ[q]] /; FreeQ[m, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}{(a+bx)(c+dx)}\,dx=\frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^3}{3B(bc-ad)n}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.96

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^3}{3(bBcn-aBdn)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/((a + b*x)*(c + d*x)),
x]
```

```
[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/(3*(b*B*c*n - a*B*d*n))
```

fricas [B] time = 0.82, size = 188, normalized size = 4.18

$$B^2n^2\log(bx+a)^3-B^2n^2\log(dx+c)^3+3\left(B^2n\log(e)+ABn\right)\log(bx+a)^2+3\left(B^2n^2\log(bx+a)+B^2n\log\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*x+a)/(d*x+c),x, algorithm
="fricas")
```

```
[Out] 1/3*(B^2*n^2*log(b*x + a)^3 - B^2*n^2*log(d*x + c)^3 + 3*(B^2*n*log(e) + A*
B*n)*log(b*x + a)^2 + 3*(B^2*n^2*log(b*x + a) + B^2*n*log(e) + A*B*n)*log(d
```

```
*x + c)^2 + 3*(B^2*log(e)^2 + 2*A*B*log(e) + A^2)*log(b*x + a) - 3*(B^2*n^2
*log(b*x + a)^2 + B^2*log(e)^2 + 2*A*B*log(e) + A^2 + 2*(B^2*n*log(e) + A*B
*n)*log(b*x + a))*log(d*x + c))/(b*c - a*d)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A\right)^2}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*x+a)/(d*x+c),x, algorithm
="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^2/((b*x + a)*(d*x + c)), x
)
```

maple [C] time = 3.78, size = 11062, normalized size = 245.82

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*x+a)/(d*x+c),x)
```

```
[Out] result too large to display
```

maxima [B] time = 1.47, size = 387, normalized size = 8.60

$$B^2\left(\frac{\log(bx+a)}{bc-ad}-\frac{\log(dx+c)}{bc-ad}\right)\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^2+2\,AB\left(\frac{\log(bx+a)}{bc-ad}-\frac{\log(dx+c)}{bc-ad}\right)\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A^2\left(\frac{\log}{b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*x+a)/(d*x+c),x, algorithm
="maxima")
```

```
[Out] B^2*(log(b*x + a)/(b*c - a*d) - log(d*x + c)/(b*c - a*d))*log((b*x + a)^n*e
/(d*x + c)^n)^2 + 2*A*B*(log(b*x + a)/(b*c - a*d) - log(d*x + c)/(b*c - a*d
))*log((b*x + a)^n*e/(d*x + c)^n) + A^2*(log(b*x + a)/(b*c - a*d) - log(d*x
 + c)/(b*c - a*d)) - 1/3*B^2*(3*(e*n*log(b*x + a)^2 - 2*e*n*log(b*x + a)*lo
g(d*x + c) + e*n*log(d*x + c)^2)*log((b*x + a)^n*e/(d*x + c)^n)/((b*c - a*d
)*e) - (e^2*n^2*log(b*x + a)^3 - 3*e^2*n^2*log(b*x + a)^2*log(d*x + c) + 3*
e^2*n^2*log(b*x + a)*log(d*x + c)^2 - e^2*n^2*log(d*x + c)^3)/((b*c - a*d)*
e^2)) - (e*n*log(b*x + a)^2 - 2*e*n*log(b*x + a)*log(d*x + c) + e*n*log(d*x
 + c)^2)*A*B/((b*c - a*d)*e)
```

mupad [B] time = 4.77, size = 100, normalized size = 2.22

$$-\frac{-6\mathrm{i}\,n\,\mathrm{atan}\left(\frac{b\,c\,2\mathrm{i}+b\,d\,x\,2\mathrm{i}}{a\,d-b\,c}+1\mathrm{i}\right)\,A^2+3\,A\,B\ln\left(\frac{e\,(a+b\,x)^n}{(c+d\,x)^n}\right)^2+B^2\ln\left(\frac{e\,(a+b\,x)^n}{(c+d\,x)^n}\right)^3}{3\,n\,\left(a\,d-b\,c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2/((a + b*x)*(c + d*x)),x)
```

```
[Out] -(B^2*log((e*(a + b*x)^n)/(c + d*x)^n)^3 + 3*A*B*log((e*(a + b*x)^n)/(c + d
*x)^n)^2 - A^2*n*atan((b*c*2i + b*d*x*2i)/(a*d - b*c) + 1i)*6i)/(3*n*(a*d -
 b*c))
```

sympy [**F(-1)**]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**2/(b*x+a)/(d*x+c),x)
[Out] Timed out
```

3.230 $\int \frac{A+B\log(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=45

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^2}{2Bn(bc-ad)}$$

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

Rubi [A] time = 0.08, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.026, Rules used = {6686}

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^2}{2Bn(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])/((a + b*x)*(c + d*x)),x]
```

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

Rule 6686

```
Int[(u_)*(y_)^(m_.), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Si
mp[(q*y^(m + 1))/(m + 1), x] /;  !FalseQ[q]] /; FreeQ[m, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(a+bx)(c+dx)}\,dx=\frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}{2B(bc-ad)n}$$

Mathematica [A] time = 0.01, size = 43, normalized size = 0.96

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^2}{2(bBcn-aBdn)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])/((a + b*x)*(c + d*x)),x]
```

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

fricas [A] time = 1.13, size = 72, normalized size = 1.60

$$\frac{Bn\log\left(bx+a\right)^2+Bn\log\left(dx+c\right)^2+2\left(B\log(e)+A\right)\log\left(bx+a\right)-2\left(Bn\log\left(bx+a\right)+B\log(e)+A\right)\log\left(dx\right.}{2\left(bc-ad\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(b*x+a)/(d*x+c),x, algorithm="
fricas")
```

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

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{B\log\left(\frac{(bx+a)^{n}e}{(dx+c)^{n}}\right)+A}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(b*x+a)/(d*x+c),x, algorithm="
giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)/((b*x + a)*(d*x + c)), x)
```

maple [C] time = 0.61, size = 1152, normalized size = 25.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/(b*x+a)/(d*x+c),x)
```

```
[Out] -1/(a*d-b*c)*B*n*ln(b*x+a)*ln(d*x+c)-1/(a*d-b*c)*A*ln(b*x+a)+1/(a*d-b*c)*A*
ln(-d*x-c)+1/2/(a*d-b*c)*B*n*ln(d*x+c)^2+1/2/(a*d-b*c)*B*n*ln(b*x+a)^2+1/(a
*d-b*c)*B*ln((b*x+a)^n)*ln(d*x+c)-1/(a*d-b*c)*B*ln((b*x+a)^n)*ln(b*x+a)-1/(
a*d-b*c)*B*ln(e)*ln(b*x+a)+1/(a*d-b*c)*B*ln(e)*ln(-d*x-c)+B*(ln(b*x+a)-ln(d
*x+c))/(a*d-b*c)*ln((d*x+c)^n)-1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*(b*x+a
)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I
*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*
csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+1/2*I/(a*d-b*c)*B*Pi*ln
(-d*x-c)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-1/2*I/(a*d-b*c
)*B*Pi*ln(b*x+a)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)
^n)^2+1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*
e/((d*x+c)^n)*(b*x+a)^n)^2-1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*e)*csgn(I*
e/((d*x+c)^n)*(b*x+a)^n)^2+1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I*e)*csgn(I
*e/((d*x+c)^n)*(b*x+a)^n)^2+1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*(b*x+a)^n
)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))-1/2*I/(a*d-b*c)*B*Pi*ln
(-d*x-c)*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n)
)+1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*cs
gn(I*e/((d*x+c)^n)*(b*x+a)^n)-1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(I*e)*csg
n(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)-1/2*I/(a*d-b*c)*
B*Pi*ln(-d*x-c)*csgn(I*(b*x+a)^n/((d*x+c)^n))^3+1/2*I/(a*d-b*c)*B*Pi*ln(b*x
+a)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3-1/2*I/(a*d-b*c)*B*Pi*ln(-d*x-c)*csgn(
I*e/((d*x+c)^n)*(b*x+a)^n)^3+1/2*I/(a*d-b*c)*B*Pi*ln(b*x+a)*csgn(I*(b*x+a)^
n/((d*x+c)^n))^3
```

maxima [B] time = 1.20, size = 151, normalized size = 3.36

$$B\left(\frac{\log\left(bx+a\right)}{bc-ad}-\frac{\log\left(dx+c\right)}{bc-ad}\right)\log\left(\frac{(bx+a)^{n}e}{(dx+c)^{n}}\right)+A\left(\frac{\log\left(bx+a\right)}{bc-ad}-\frac{\log\left(dx+c\right)}{bc-ad}\right)-\frac{\left(en\log\left(bx+a\right)^{2}-2\,en\log\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(b*x+a)/(d*x+c),x, algorithm="
maxima")
```

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

mupad [B] time = 4.67, size = 71, normalized size = 1.58

$$-\frac{B\ln\left(\frac{e\,(a+b\,x)^n}{(c+d\,x)^n}\right)^2-A\,n\,\mathrm{atan}\left(\frac{b\,c\,2\mathrm{i}+b\,d\,x\,2\mathrm{i}}{a\,d-b\,c}+1\mathrm{i}\right)\,4\mathrm{i}}{2\,n\,\left(a\,d-b\,c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/((a + b*x)*(c + d*x)),x)
```

```
[Out] -(B*log((e*(a + b*x)^n)/(c + d*x)^n)^2 - A*n*atan((b*c*2i + b*d*x*2i)/(a*d
- b*c) + 1i)*4i)/(2*n*(a*d - b*c))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))/(b*x+a)/(d*x+c),x)
```

```
[Out] Timed out
```

3.231 $\int \frac{1}{(a+bx)(c+dx)\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)}\,dx$

Optimal. Leaf size=41

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{Bn(bc-ad)}$$

```
[Out] ln(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/B/(-a*d+b*c)/n
```

Rubi [A] time = 0.12, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.025$, Rules used = {6684}

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{Bn(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])),x]
```

```
[Out] Log[A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n]]/(B*(b*c - a*d)*n)
```

Rule 6684

```
Int[(u_)/(y_), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Simp[q*L
og[RemoveContent[y, x]], x] /;  !FalseQ[q]]
```

Rubi steps

$$\int \frac{1}{(a+bx)(c+dx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\,dx=\frac{\log\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}{B(bc-ad)n}$$

Mathematica [A] time = 0.09, size = 39, normalized size = 0.95

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{bBcn-aBdn}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])),
x]
```

```
[Out] Log[A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n]]/(b*B*c*n - a*B*d*n)
```

fricas [A] time = 0.90, size = 45, normalized size = 1.10

$$\frac{\log\left(-Bn\log\left(bx+a\right)+Bn\log\left(dx+c\right)-B\log(e)-A\right)}{(Bbc-Bad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm
="fricas")
```

```
[Out] log(-B*n*log(b*x + a) + B*n*log(d*x + c) - B*log(e) - A)/((B*b*c - B*a*d)*n
)
```

giac [A] time = 0.17, size = 38, normalized size = 0.93

$$\frac{\log\left(Bn\log\left(bx+a\right)-Bn\log\left(dx+c\right)+A+B\right)}{Bbcn-Badn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm
="giac")
```

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

maple [C] time = 0.19, size = 368, normalized size = 8.98

$$-\frac{\ln\left(\ln\left(\left(dx+c\right)^{n}\right)-\frac{-i\pi B\,\mathrm{csgn}(ie)\mathrm{csgn}\left(i(bx+a)^{n}(dx+c)^{-n}\right)\mathrm{csgn}\left(ie(bx+a)^{n}(dx+c)^{-n}\right)+i\pi B\,\mathrm{csgn}(ie)\mathrm{csgn}\left(ie(bx+a)^{n}(dx+c)^{-n}\right)^{2}-i\pi B\,\mathrm{csgn}\left(i(bx+\cdots\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x)
```

```
[Out] -1/B/n/(a*d-b*c)*ln(ln((d*x+c)^n)-1/2*(-I*B*Pi*csgn(I*e)*csgn(I*(b*x+a)^n/(
(d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)+I*B*Pi*csgn(I*e)*csgn(I*e/((d*x
+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*
x+a)^n/((d*x+c)^n))+I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^
2+I*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-I*B*Pi*csgn(I*
(b*x+a)^n/((d*x+c)^n))^3+I*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*
x+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3+2*B*ln(e)+2*B
*ln((b*x+a)^n)+2*A)/B)
```

maxima [A] time = 2.33, size = 49, normalized size = 1.20

$$\frac{\log\left(-\frac{B\log\left(\left(bx+a\right)^{n}\right)-B\log\left(\left(dx+c\right)^{n}\right)+B\log\left(e\right)+A}{B}\right)}{\left(bcn-adn\right)B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm
="maxima")
```

```
[Out] log(-(B*log((b*x + a)^n) - B*log((d*x + c)^n) + B*log(e) + A)/B)/((b*c*n -
a*d*n)*B)
```

mupad [B] time = 4.66, size = 40, normalized size = 0.98

$$-\frac{\ln\left(A+B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)\right)}{B\,a\,d\,n-B\,b\,c\,n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))*(a + b*x)*(c + d*x)),x)
```

```
[Out] -log(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/(B*a*d*n - B*b*c*n)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n))),x)
```

```
[Out] Timed out
```

3.232 $\int \frac{1}{(a+bx)(c+dx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}\,dx$

Optimal. Leaf size=43

$$-\frac{1}{Bn(bc-ad)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}$$

```
[Out] -1/B/(-a*d+b*c)/n/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))
```

Rubi [A] time = 0.12, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.025, Rules used = {6686}

$$-\frac{1}{Bn(bc-ad)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2),x]
```

```
[Out] -(1/(B*(b*c - a*d)*n*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])))
```

Rule 6686

```
Int[(u_)*(y_)^(m_.), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Si
mp[(q*y^(m + 1))/(m + 1), x] /;  !FalseQ[q]] /; FreeQ[m, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{1}{(a+bx)(c+dx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}\,dx=-\frac{1}{B(bc-ad)n\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}$$

Mathematica [A] time = 0.02, size = 41, normalized size = 0.95

$$-\frac{1}{(bBcn-aBdn)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2
),x]
```

```
[Out] -(1/((b*B*c*n - a*B*d*n)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])))
```

fricas [A] time = 0.61, size = 86, normalized size = 2.00

$$-\frac{1}{\left(B^2bc-B^2ad\right)n^2\log\left(bx+a\right)-\left(B^2bc-B^2ad\right)n^2\log\left(dx+c\right)+\left(B^2bc-B^2ad\right)n\log(e)+(ABbc-ABad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, algorit
hm="fricas")
```

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

giac [B] time = 0.18, size = 95, normalized size = 2.21

$$-\frac{1}{B^2bcn^2\log(bx+a)-B^2adn^2\log(bx+a)-B^2bcn^2\log(dx+c)+B^2adn^2\log(dx+c)+ABbcn+B^2bcn-AB}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, algorit
hm="giac")
```

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

maple [C] time = 0.18, size = 366, normalized size = 8.51

$$\frac{}{(ad-bc)\left(-i\pi B\,\mathrm{csgn}(ie)\,\mathrm{csgn}\left(i(bx+a)^n(dx+c)^{-n}\right)\mathrm{csgn}\left(ie(bx+a)^n(dx+c)^{-n}\right)+i\pi B\,\mathrm{csgn}(ie)\,\mathrm{csgn}\left(ie(bx+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2/B/n/(a*d-b*c)/(2*A+2*B*ln(e)+2*B*ln((b*x+a)^n)-2*B*ln((d*x+c)^n)-I*B*Pi*c
sgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))+I*B*Pi*c
sgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+I*B*Pi*csgn(I/((d*x+c)^n))
*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-I*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))^3-I*B
*Pi*csgn(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)
+I*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2+I*B*Pi*csgn(I*(b*x+a)^n
/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*e/((d*x+c)^n)
*(b*x+a)^n)^3)
```

maxima [A] time = 2.47, size = 81, normalized size = 1.88

$$-\frac{1}{(bcn-adn)B^2\log\left((bx+a)^n\right)-(bcn-adn)B^2\log\left((dx+c)^n\right)+(bcn-adn)AB+\left(bcn\log(e)-adn\log(e)\right)B^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, algorit
hm="maxima")
```

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

mupad [B] time = 4.49, size = 42, normalized size = 0.98

$$\frac{1}{B\,n\,\left(A+B\,\ln\left(\frac{e\,{(a+b\,x)}^n}{{(c+d\,x)}^n}\right)\right)\,\left(a\,d-b\,c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/(B*n*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))*(a*d - b*c))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**2,x)
```

```
[Out] Timed out
```

3.233 $\int \frac{1}{(a+bx)(c+dx)\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^3}\,dx$

Optimal. Leaf size=45

$$-\frac{1}{2Bn(bc-ad)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^2}$$

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

Rubi [A] time = 0.12, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.025, Rules used = {6686}

$$-\frac{1}{2Bn(bc-ad)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3),x]
```

```
[Out] -1/(2*B*(b*c - a*d)*n*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2)
```

Rule 6686

```
Int[(u_)*(y_)^(m_.), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Si
mp[(q*y^(m + 1))/(m + 1), x] /;  !FalseQ[q]] /; FreeQ[m, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{1}{(a+bx)(c+dx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^3}\,dx = -\frac{1}{2B(bc-ad)n\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right.}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.96

$$-\frac{1}{2(bBcn-aBdn)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3
),x]
```

```
[Out] -1/2*1/((b*B*c*n - a*B*d*n)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2)
```

fricas [B] time = 0.74, size = 238, normalized size = 5.29

$$-\frac{}{2\left(\left(B^3bc-B^3ad\right)n^3\log\left(bx+a\right)^2+\left(B^3bc-B^3ad\right)n^3\log\left(dx+c\right)^2+\left(B^3bc-B^3ad\right)n\log(e)^2+2\left(AB^2bc-A\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3,x, algorit
hm="fricas")
```

```
[Out] -1/2/((B^3*b*c - B^3*a*d)*n^3*log(b*x + a)^2 + (B^3*b*c - B^3*a*d)*n^3*log(
d*x + c)^2 + (B^3*b*c - B^3*a*d)*n*log(e)^2 + 2*(A*B^2*b*c - A*B^2*a*d)*n*l
```

```
og(e) + (A^2*B*b*c - A^2*B*a*d)*n + 2*((B^3*b*c - B^3*a*d)*n^2*log(e) + (A*
B^2*b*c - A*B^2*a*d)*n^2)*log(b*x + a) - 2*((B^3*b*c - B^3*a*d)*n^3*log(b*x
 + a) + (B^3*b*c - B^3*a*d)*n^2*log(e) + (A*B^2*b*c - A*B^2*a*d)*n^2)*log(d
*x + c))
```

giac [B] time = 0.24, size = 301, normalized size = 6.69

$$-\frac{}{2\left(B^3bcn^3\log\left(bx+a\right)^2-B^3adn^3\log\left(bx+a\right)^2-2\,B^3bcn^3\log\left(bx+a\right)\log\left(dx+c\right)+2\,B^3adn^3\log\left(bx+a\right)\log\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3,x, algorit
hm="giac")
```

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

maple [C] time = 0.18, size = 366, normalized size = 8.13

$$\frac{}{\left(ad-bc\right)\left(-i\pi B\,\mathrm{csgn}\left(ie\right)\mathrm{csgn}\left(i\left(bx+a\right)^{n}\left(dx+c\right)^{-n}\right)\mathrm{csgn}\left(ie\left(bx+a\right)^{n}\left(dx+c\right)^{-n}\right)+i\pi B\,\mathrm{csgn}\left(ie\right)\mathrm{csgn}\left(ie\left(bx+\right.\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3,x)
```

```
[Out] 2/B/n/(a*d-b*c)/(2*A+2*B*ln(e)+2*B*ln((b*x+a)^n)-2*B*ln((d*x+c)^n)-I*B*Pi*c
sgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))+I*B*Pi*c
sgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2+I*B*Pi*csgn(I/((d*x+c)^n))
*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-I*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))^3-I*B
*Pi*csgn(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)
+I*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2+I*B*Pi*csgn(I*(b*x+a)^n
/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*e/((d*x+c)^n)
*(b*x+a)^n)^3)^2
```

maxima [B] time = 3.19, size = 220, normalized size = 4.89

$$-\frac{}{2\left(\left(bcn-adn\right)B^3\log\left(\left(bx+a\right)^{n}\right)^2+\left(bcn-adn\right)B^3\log\left(\left(dx+c\right)^{n}\right)^2+\left(bcn-adn\right)A^2B+2\left(bcn\log(e)-adn\log\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3,x, algorit
hm="maxima")
```

```
[Out] -1/2/((b*c*n - a*d*n)*B^3*log((b*x + a)^n)^2 + (b*c*n - a*d*n)*B^3*log((d*x
 + c)^n)^2 + (b*c*n - a*d*n)*A^2*B + 2*(b*c*n*log(e) - a*d*n*log(e))*A*B^2
+ (b*c*n*log(e)^2 - a*d*n*log(e)^2)*B^3 + 2*((b*c*n - a*d*n)*A*B^2 + (b*c*n
*log(e) - a*d*n*log(e))*B^3)*log((b*x + a)^n) - 2*((b*c*n - a*d*n)*B^3*log(
(b*x + a)^n) + (b*c*n - a*d*n)*A*B^2 + (b*c*n*log(e) - a*d*n*log(e))*B^3)*l
og((d*x + c)^n))
```

mupad [B] time = 4.54, size = 72, normalized size = 1.60

$$\frac{1}{2\,B\,n\,\left(a\,d-b\,c\right)\,\left(A^2+2\,A\,B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)+B^2\,{\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)}^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3*(a + b*x)*(c + d*x)),x)
```

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

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**3,x)
```

```
[Out] Timed out
```

3.234 $\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^p}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=49

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^{p+1}}{Bn(p+1)(bc-ad)}$$

```
[Out] (A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^(1+p)/B/(-a*d+b*c)/n/(1+p)
```

Rubi [A] time = 0.15, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.025, Rules used = {6686}

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^{p+1}}{Bn(p+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/((a + b*x)*(c + d*x)),x]
```

```
[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/(B*(b*c - a*d)*n*(1 + p))
```

Rule 6686

```
Int[(u_)*(y_)^(m_.), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Si
mp[(q*y^(m + 1))/(m + 1), x] /;  !FalseQ[q]] /; FreeQ[m, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^p}{(a+bx)(c+dx)}\,dx=\frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^{1+p}}{B(bc-ad)n(1+p)}$$

Mathematica [A] time = 0.03, size = 47, normalized size = 0.96

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^{p+1}}{(p+1)(bBcn-aBdn)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/((a + b*x)*(c + d*x)),
x]
```

```
[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/((b*B*c*n - a*B*d*n)*(1 +
p))
```

fricas [A] time = 0.93, size = 81, normalized size = 1.65

$$\frac{\left(Bn\log\left(bx+a\right)-Bn\log\left(dx+c\right)+B\log(e)+A\right)\left(Bn\log\left(bx+a\right)-Bn\log\left(dx+c\right)+B\log(e)+A\right)^p}{(Bbc-Bad)np+(Bbc-Bad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*x+a)/(d*x+c),x, algorithm
="fricas")
```

```
[Out] (B*n*log(b*x + a) - B*n*log(d*x + c) + B*log(e) + A)*(B*n*log(b*x + a) - B*
n*log(d*x + c) + B*log(e) + A)^p/((B*b*c - B*a*d)*n*p + (B*b*c - B*a*d)*n)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A\right)^p}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*x+a)/(d*x+c),x, algorithm
="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/((b*x + a)*(d*x + c)), x
)
```

maple [F] time = 12.80, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\,(bx+a)^n\,(dx+c)^{-n}\right)+A\right)^p}{(bx+a)\,(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*x+a)/(d*x+c),x)
```

```
[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*x+a)/(d*x+c),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A\right)^p}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*x+a)/(d*x+c),x, algorithm
="maxima")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/((b*x + a)*(d*x + c)), x
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(A+B\,\ln\left(\frac{e\,(a+b\,x)^n}{(c+d\,x)^n}\right)\right)^p}{(a+b\,x)\,(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/((a + b*x)*(c + d*x)),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/((a + b*x)*(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**p/(b*x+a)/(d*x+c),x)
```

```
[Out] Timed out
```

3.235 $\int \frac{(A+B\log(e(a+bx)^n(c+dx)^{-n}))^p}{(af+bfx)(cg+dgx)}\,dx$

Optimal. Leaf size=55

$$\frac{(B\log(e(a+bx)^n(c+dx)^{-n})+A)^{p+1}}{Bfgn(p+1)(bc-ad)}$$

```
[Out] (A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^(1+p)/B/(-a*d+b*c)/f/g/n/(1+p)
```

Rubi [A] time = 0.22, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.022, Rules used = {6686}

$$\frac{(B\log(e(a+bx)^n(c+dx)^{-n})+A)^{p+1}}{Bfgn(p+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/((a*f + b*f*x)*(c*g + d*g*x)
),x]
```

```
[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/(B*(b*c - a*d)*f*g*n*(1 +
p))
```

Rule 6686

```
Int[(u_)*(y_)^(m_.), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Si
mp[(q*y^(m + 1))/(m + 1), x] /;  !FalseQ[q]] /; FreeQ[m, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{(A+B\log(e(a+bx)^n(c+dx)^{-n}))^p}{(af+bfx)(cg+dgx)}\,dx=\frac{(A+B\log(e(a+bx)^n(c+dx)^{-n}))^{1+p}}{B(bc-ad)fgn(1+p)}$$

Mathematica [A] time = 0.06, size = 51, normalized size = 0.93

$$\frac{(B\log(e(a+bx)^n(c+dx)^{-n})+A)^{p+1}}{(p+1)(bBcfgn-aBdfgn)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/((a*f + b*f*x)*(c*g +
d*g*x)),x]
```

```
[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/((b*B*c*f*g*n - a*B*d*f*g*
n)*(1 + p))
```

fricas [A] time = 0.79, size = 85, normalized size = 1.55

$$\frac{(Bn\log(bx+a)-Bn\log(dx+c)+B\log(e)+A)(Bn\log(bx+a)-Bn\log(dx+c)+B\log(e)+A)^p}{(Bbc-Bad)fgnp+(Bbc-Bad)fgn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*f*x+a*f)/(d*g*x+c*g),x, a
lgorithm="fricas")
```

```
[Out] (B*n*log(b*x + a) - B*n*log(d*x + c) + B*log(e) + A)*(B*n*log(b*x + a) - B*
n*log(d*x + c) + B*log(e) + A)^p/((B*b*c - B*a*d)*f*g*n*p + (B*b*c - B*a*d)
*f*g*n)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B\log\left(\frac{(bx+a)^{n}e}{(dx+c)^{n}}\right)+A\right)^{p}}{\left(bfx+af\right)\left(dgx+cg\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*f*x+a*f)/(d*g*x+c*g),x, a
lgorithm="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/((b*f*x + a*f)*(d*g*x +
c*g)), x)
```

maple [F] time = 12.59, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\,(bx+a)^{n}\,(dx+c)^{-n}\right)+A\right)^{p}}{\left(bxf+af\right)\left(dgx+cg\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*f*x+a*f)/(d*g*x+c*g),x)
```

```
[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*f*x+a*f)/(d*g*x+c*g),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B\log\left(\frac{(bx+a)^{n}e}{(dx+c)^{n}}\right)+A\right)^{p}}{\left(bfx+af\right)\left(dgx+cg\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^p/(b*f*x+a*f)/(d*g*x+c*g),x, a
lgorithm="maxima")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/((b*f*x + a*f)*(d*g*x +
c*g)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(A+B\,\ln\left(\frac{e\,(a+b\,x)^{n}}{(c+d\,x)^{n}}\right)\right)^{p}}{\left(a\,f+b\,f\,x\right)\,\left(c\,g+d\,g\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/((a*f + b*f*x)*(c*g + d*g*x)
),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/((a*f + b*f*x)*(c*g + d*g*x)
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**p/(b*f*x+a*f)/(d*g*x+c*g),x)
```

```
[Out] Timed out
```

3.236 $\int \frac{\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^p}{acf+(bc+ad)fx+bdfx^2}\,dx$

Optimal. Leaf size=52

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^{p+1}}{Bfn(p+1)(bc-ad)}$$

```
[Out] (A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^(1+p)/B/(-a*d+b*c)/f/n/(1+p)
```

Rubi [A] time = 0.11, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 50, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.020, Rules used = {6686}

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^{p+1}}{Bfn(p+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/(a*c*f + (b*c + a*d)*f*x + b
*d*f*x^2),x]
```

```
[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/(B*(b*c - a*d)*f*n*(1 + p)
)
```

Rule 6686

```
Int[(u_)*(y_)^(m_.), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Si
mp[(q*y^(m + 1))/(m + 1), x] /;  !FalseQ[q]] /; FreeQ[m, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^p}{acf+(bc+ad)fx+bdfx^2}\,dx=\frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^{1+p}}{B(bc-ad)fn(1+p)}$$

Mathematica [A] time = 0.01, size = 50, normalized size = 0.96

$$\frac{\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)^{p+1}}{f(p+1)(bBcn-aBdn)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^p/(a*c*f + (b*c + a*d)*f
*x + b*d*f*x^2),x]
```

```
[Out] (A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^(1 + p)/(f*(b*B*c*n - a*B*d*n)*(1
+ p))
```

fricas [A] time = 1.03, size = 83, normalized size = 1.60

$$\frac{\left(Bn\log\left(bx+a\right)-Bn\log\left(dx+c\right)+B\log(e)+A\right)\left(Bn\log\left(bx+a\right)-Bn\log\left(dx+c\right)+B\log(e)+A\right)^p}{(Bbc-Bad)fnp+(Bbc-Bad)fn}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (B*n*log(b*x + a) - B*n*log(d*x + c) + B*log(e) + A)*(B*n*log(b*x + a) - B*
n*log(d*x + c) + B*log(e) + A)^p/((B*b*c - B*a*d)*f*n*p + (B*b*c - B*a*d)*f
*n)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A\right)^p}{bdfx^2+acf+(bc+ad)fx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/(b*d*f*x^2 + a*c*f + (b*
c + a*d)*f*x), x)
```

maple [F] time = 14.17, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\,(bx+a)^n\,(dx+c)^{-n}\right)+A\right)^p}{bdf\,x^2+acf+(ad+bc)\,fx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2),x)
```

```
[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^p/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A\right)^p}{bdfx^2+acf+(bc+ad)fx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^p/(b*d*f*x^2 + a*c*f + (b*
c + a*d)*f*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(A+B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)\right)^p}{b\,d\,f\,x^2+f\,\left(a\,d+b\,c\right)\,x+a\,c\,f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/(a*c*f + f*x*(a*d + b*c) + b
*d*f*x^2),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^p/(a*c*f + f*x*(a*d + b*c) + b
*d*f*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**p/(a*c*f+(a*d+b*c)*f*x+b*d*f
*x**2),x)
```

```
[Out] Timed out
```

3.237 $\int \frac{1}{(a+bx)(c+dx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\,dx$

Optimal. Leaf size=41

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{Bn(bc-ad)}$$

```
[Out] ln(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/B/(-a*d+b*c)/n
```

Rubi [A] time = 0.12, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.025, Rules used = {6684}

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{Bn(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])),x]
```

```
[Out] Log[A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n]]/(B*(b*c - a*d)*n)
```

Rule 6684

```
Int[(u_)/(y_), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Simp[q*L
og[RemoveContent[y, x]], x] /;  !FalseQ[q]]
```

Rubi steps

$$\int \frac{1}{(a+bx)(c+dx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\,dx=\frac{\log\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}{B(bc-ad)n}$$

Mathematica [A] time = 0.07, size = 39, normalized size = 0.95

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{bBcn-aBdn}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)*(c + d*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])),
x]
```

```
[Out] Log[A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n]]/(b*B*c*n - a*B*d*n)
```

fricas [A] time = 0.74, size = 45, normalized size = 1.10

$$\frac{\log\left(-Bn\log\left(bx+a\right)+Bn\log\left(dx+c\right)-B\log(e)-A\right)}{(Bbc-Bad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm
="fricas")
```

```
[Out] log(-B*n*log(b*x + a) + B*n*log(d*x + c) - B*log(e) - A)/((B*b*c - B*a*d)*n
)
```

giac [A] time = 0.18, size = 38, normalized size = 0.93

$$\frac{\log\left(Bn\log\left(bx+a\right)-Bn\log\left(dx+c\right)+A+B\right)}{Bbcn-Badn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm
="giac")
```

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

maple [C] time = 0.05, size = 368, normalized size = 8.98

$$-\frac{\ln\left(\ln\left(\left(dx+c\right)^{n}\right)-\frac{-i\pi B\,\mathrm{csgn}(ie)\mathrm{csgn}\left(i(bx+a)^{n}(dx+c)^{-n}\right)\mathrm{csgn}\left(ie(bx+a)^{n}(dx+c)^{-n}\right)+i\pi B\,\mathrm{csgn}(ie)\mathrm{csgn}\left(ie(bx+a)^{n}(dx+c)^{-n}\right)^{2}-i\pi B\,\mathrm{csgn}\left(i(\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x)
```

```
[Out] -1/B/n/(a*d-b*c)*ln(ln((d*x+c)^n)-1/2*(-I*B*Pi*csgn(I*e)*csgn(I*(b*x+a)^n/(
(d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)+I*B*Pi*csgn(I*e)*csgn(I*e/((d*x
+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*
x+a)^n/((d*x+c)^n))+I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^
2+I*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-I*B*Pi*csgn(I*
(b*x+a)^n/((d*x+c)^n))^3+I*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*
x+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3+2*B*ln(e)+2*B
*ln((b*x+a)^n)+2*A)/B)
```

maxima [A] time = 2.29, size = 49, normalized size = 1.20

$$\frac{\log\left(-\frac{B\log\left((bx+a)^{n}\right)-B\log\left((dx+c)^{n}\right)+B\log(e)+A}{B}\right)}{(bcn-adn)B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm
="maxima")
```

```
[Out] log(-(B*log((b*x + a)^n) - B*log((d*x + c)^n) + B*log(e) + A)/B)/((b*c*n -
a*d*n)*B)
```

mupad [B] time = 0.00, size = 40, normalized size = 0.98

$$-\frac{\ln\left(A+B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)\right)}{B\,a\,d\,n-B\,b\,c\,n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))*(a + b*x)*(c + d*x)),x)
```

```
[Out] -log(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/(B*a*d*n - B*b*c*n)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n))),x)
```

```
[Out] Timed out
```

3.238 $\int \frac{1}{(af+bfx)(cg+dgx)\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)}\,dx$

Optimal. Leaf size=47

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{Bfgn(bc-ad)}$$

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

Rubi [A] time = 0.17, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.022, Rules used = {6684}

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{Bfgn(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a*f + b*f*x)*(c*g + d*g*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])
),x]
```

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

Rule 6684

```
Int[(u_)/(y_), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Simp[q*L
og[RemoveContent[y, x]], x] /;  !FalseQ[q]]
```

Rubi steps

$$\int \frac{1}{(af+bfx)(cg+dgx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\,dx=\frac{\log\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}{B(bc-ad)fgn}$$

Mathematica [A] time = 0.15, size = 43, normalized size = 0.91

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{bBcfgn-aBdfgn}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a*f + b*f*x)*(c*g + d*g*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*
x)^n])),x]
```

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

fricas [A] time = 0.91, size = 51, normalized size = 1.09

$$\frac{\log\left(-Bn\log\left(bx+a\right)+Bn\log\left(dx+c\right)-B\log(e)-A\right)}{(Bbc-Bad)fgn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*f*x+a*f)/(d*g*x+c*g)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, a
lgorithm="fricas")
```

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

giac [A] time = 0.24, size = 42, normalized size = 0.89

$$\frac{\log\left(Bn\log\left(bx+a\right)-Bn\log\left(dx+c\right)+A+B\right)}{Bbcfgn-Badfgn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*f*x+a*f)/(d*g*x+c*g)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, a
lgorithm="giac")
```

```
[Out] log(B*n*log(b*x + a) - B*n*log(d*x + c) + A + B)/(B*b*c*f*g*n - B*a*d*f*g*n
)
```

maple [C] time = 0.20, size = 374, normalized size = 7.96

$$-\frac{\ln\left(\ln\left((dx+c)^n\right)-\frac{-i\pi B\,\mathrm{csgn}(ie)\mathrm{csgn}\left(i(bx+a)^n(dx+c)^{-n}\right)\mathrm{csgn}\left(ie(bx+a)^n(dx+c)^{-n}\right)+i\pi B\,\mathrm{csgn}(ie)\mathrm{csgn}\left(ie(bx+a)^n(dx+c)^{-n}\right)^2-i\pi B\,\mathrm{csgn}\left(i(\cdots\right.}{\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*f*x+a*f)/(d*g*x+c*g)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x)
```

```
[Out] -1/B/f/g/n/(a*d-b*c)*ln(ln((d*x+c)^n)-1/2*(-I*B*Pi*csgn(I*e)*csgn(I*(b*x+a)
^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)+I*B*Pi*csgn(I*e)*csgn(I*e/(
(d*x+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I
*(b*x+a)^n/((d*x+c)^n))+I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^
n))^2+I*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-I*B*Pi*csg
n(I*(b*x+a)^n/((d*x+c)^n))^3+I*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/
((d*x+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3+2*B*ln(e)
+2*B*ln((b*x+a)^n)+2*A)/B)
```

maxima [A] time = 1.69, size = 53, normalized size = 1.13

$$\frac{\log\left(-\frac{B\log\left((bx+a)^n\right)-B\log\left((dx+c)^n\right)+B\log\left(e\right)+A}{B}\right)}{\left(bcfgn-adfgn\right)B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*f*x+a*f)/(d*g*x+c*g)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, a
lgorithm="maxima")
```

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

mupad [B] time = 4.43, size = 44, normalized size = 0.94

$$-\frac{\ln\left(A+B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)\right)}{B\,a\,d\,f\,g\,n-B\,b\,c\,f\,g\,n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a*f + b*f*x)*(c*g + d*g*x)*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))
),x)
```

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

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.239 $\int \frac{1}{(acf+(bc+ad)fx+bdfx^2)(A+B\log(e(a+bx)^n(c+dx)^{-n}))}\,dx$

Optimal. Leaf size=44

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{Bfn(bc-ad)}$$

```
[Out] ln(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/B/(-a*d+b*c)/f/n
```

Rubi [A] time = 0.08, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 50, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.020, Rules used = {6684}

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{Bfn(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a*c*f + (b*c + a*d)*f*x + b*d*f*x^2)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])),x]
```

```
[Out] Log[A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n]]/(B*(b*c - a*d)*f*n)
```

Rule 6684

```
Int[(u_)/(y_), x_Symbol] :> With[{q = DerivativeDivides[y, u, x]}, Simp[q*Log[RemoveContent[y, x]], x] /;  !FalseQ[q]]
```

Rubi steps

$$\int \frac{1}{\left(acf+(bc+ad)fx+bdfx^2\right)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\,dx=\frac{\log\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right.\right.}{B(bc-ad)fn}$$

Mathematica [A] time = 0.07, size = 42, normalized size = 0.95

$$\frac{\log\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{f(bBcn-aBdn)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a*c*f + (b*c + a*d)*f*x + b*d*f*x^2)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])),x]
```

```
[Out] Log[A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n]]/(f*(b*B*c*n - a*B*d*n))
```

fricas [A] time = 0.98, size = 48, normalized size = 1.09

$$\frac{\log\left(-Bn\log\left(bx+a\right)+Bn\log\left(dx+c\right)-B\log(e)-A\right)}{(Bbc-Bad)fn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algorithm="fricas")
```

```
[Out] log(-B*n*log(b*x + a) + B*n*log(d*x + c) - B*log(e) - A)/((B*b*c - B*a*d)*f*n)
```

giac [A] time = 0.17, size = 40, normalized size = 0.91

$$\frac{\log\left(Bn\log\left(bx+a\right)-Bn\log\left(dx+c\right)+A+B\right)}{Bbcfn-Badfn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n
))),x, algorithm="giac")
```

```
[Out] log(B*n*log(b*x + a) - B*n*log(d*x + c) + A + B)/(B*b*c*f*n - B*a*d*f*n)
```

maple [C] time = 0.21, size = 371, normalized size = 8.43

$$-\frac{\ln\left(\ln\left(\left(dx+c\right)^{n}\right)-\frac{-i\pi B\,\mathrm{csgn}(ie)\mathrm{csgn}\left(i(bx+a)^{n}(dx+c)^{-n}\right)\mathrm{csgn}\left(ie(bx+a)^{n}(dx+c)^{-n}\right)+i\pi B\,\mathrm{csgn}(ie)\mathrm{csgn}\left(ie(bx+a)^{n}(dx+c)^{-n}\right)^{2}-i\pi B\,\mathrm{csgn}\left(i(bx+\cdots\right.}{\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/B/f/n/(a*d-b*c)*ln(ln((d*x+c)^n)-1/2*(-I*B*Pi*csgn(I*e)*csgn(I*(b*x+a)^n
/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)+I*B*Pi*csgn(I*e)*csgn(I*e/((d
*x+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(
b*x+a)^n/((d*x+c)^n))+I*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n)
)^2+I*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))^2-I*B*Pi*csgn(
I*(b*x+a)^n/((d*x+c)^n))^3+I*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((
d*x+c)^n)*(b*x+a)^n)^2-I*B*Pi*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3+2*B*ln(e)+2
*B*ln((b*x+a)^n)+2*A)/B)
```

maxima [A] time = 1.58, size = 51, normalized size = 1.16

$$\frac{\log\left(-\frac{B\log\left((bx+a)^{n}\right)-B\log\left((dx+c)^{n}\right)+B\log(e)+A}{B}\right)}{\left(bcfn-adfn\right)B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*c*f+(a*d+b*c)*f*x+b*d*f*x^2)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n
))),x, algorithm="maxima")
```

```
[Out] log(-(B*log((b*x + a)^n) - B*log((d*x + c)^n) + B*log(e) + A)/B)/((b*c*f*n
- a*d*f*n)*B)
```

mupad [B] time = 4.51, size = 42, normalized size = 0.95

$$-\frac{\ln\left(A+B\,\ln\left(\frac{e\,(a+b\,x)^{n}}{(c+d\,x)^{n}}\right)\right)}{B\,a\,d\,f\,n-B\,b\,c\,f\,n}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -log(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/(B*a*d*f*n - B*b*c*f*n)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.240 $\int \frac{(a+bx)^m(c+dx)^{-2-m}}{\log(e(a+bx)^n(c+dx)^{-n})} dx$

Optimal. Leaf size=88

$$\frac{(a+bx)^{m+1}(c+dx)^{-m-1}\left(e(a+bx)^n(c+dx)^{-n}\right)^{-\frac{m+1}{n}}\operatorname{Ei}\left(\frac{(m+1)\log(e(a+bx)^n(c+dx)^{-n})}{n}\right)}{n(bc-ad)}$$

```
[Out] (b*x+a)^(1+m)*(d*x+c)^(-1-m)*Ei((1+m)*ln(e*(b*x+a)^n/((d*x+c)^n))/n)/(-a*d+
b*c)/n/((e*(b*x+a)^n/((d*x+c)^n))^((1+m)/n))
```

Rubi [A] time = 0.11, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.025, Rules used = {2510}

$$\frac{(a+bx)^{m+1}(c+dx)^{-m-1}\left(e(a+bx)^n(c+dx)^{-n}\right)^{-\frac{m+1}{n}}\operatorname{Ei}\left(\frac{(m+1)\log(e(a+bx)^n(c+dx)^{-n})}{n}\right)}{n(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)^m*(c + d*x)^(-2 - m))/Log[(e*(a + b*x)^n)/(c + d*x)^n],x]
```

```
[Out] ((a + b*x)^(1 + m)*(c + d*x)^(-1 - m)*ExpIntegralEi[((1 + m)*Log[(e*(a + b*
x)^n)/(c + d*x)^n])/n])/((b*c - a*d)*n*((e*(a + b*x)^n)/(c + d*x)^n)^((1 +
m)/n))
```

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.))/Log[(e_.)*((f_.
)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)], x_Symbol]
:> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q)^r])/(p*r)])/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q)^r)^((m + 1)/(p*r))), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
 r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{(a+bx)^m(c+dx)^{-2-m}}{\log\left(e(a+bx)^n(c+dx)^{-n}\right)}\,dx = \frac{(a+bx)^{1+m}(c+dx)^{-1-m}\left(e(a+bx)^n(c+dx)^{-n}\right)^{-\frac{1+m}{n}}\operatorname{Ei}\left(\frac{(1+m)\log(e(a+bx)^n(c+dx)^{-n}}{n}\right.}{(bc-ad)n}$$

Mathematica [F] time = 0.40, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)^m(c+dx)^{-2-m}}{\log\left(e(a+bx)^n(c+dx)^{-n}\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*x)^m*(c + d*x)^(-2 - m))/Log[(e*(a + b*x)^n)/(c + d*x)^n]
,x]
```

```
[Out] Integrate[((a + b*x)^m*(c + d*x)^(-2 - m))/Log[(e*(a + b*x)^n)/(c + d*x)^n]
, x]
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(bx+a)^m(dx+c)^{-m-2}}{\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^m*(d*x+c)^(-2-m)/log(e*(b*x+a)^n/((d*x+c)^n)),x, algorith
m="fricas")
```

```
[Out] integral((b*x + a)^m*(d*x + c)^(-m - 2)/log((b*x + a)^n*e/(d*x + c)^n), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^m(dx+c)^{-m-2}}{\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^m*(d*x+c)^(-2-m)/log(e*(b*x+a)^n/((d*x+c)^n)),x, algorith
m="giac")
```

```
[Out] integrate((b*x + a)^m*(d*x + c)^(-m - 2)/log((b*x + a)^n*e/(d*x + c)^n), x)
```

maple [F] time = 0.87, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^m (dx+c)^{-m-2}}{\ln\left(e (bx+a)^n (dx+c)^{-n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^m*(d*x+c)^(-m-2)/ln(e*(b*x+a)^n/((d*x+c)^n)),x)
```

```
[Out] int((b*x+a)^m*(d*x+c)^(-m-2)/ln(e*(b*x+a)^n/((d*x+c)^n)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^m(dx+c)^{-m-2}}{\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^m*(d*x+c)^(-2-m)/log(e*(b*x+a)^n/((d*x+c)^n)),x, algorith
m="maxima")
```

```
[Out] integrate((b*x + a)^m*(d*x + c)^(-m - 2)/log((b*x + a)^n*e/(d*x + c)^n), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)^m}{\ln\left(\frac{e\,(a+b\,x)^n}{(c+d\,x)^n}\right)\,(c+d\,x)^{m+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)^m/(log((e*(a + b*x)^n)/(c + d*x)^n)*(c + d*x)^(m + 2)),x)
```

```
[Out] int((a + b*x)^m/(log((e*(a + b*x)^n)/(c + d*x)^n)*(c + d*x)^(m + 2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**m*(d*x+c)**(-2-m)/ln(e*(b*x+a)**n/((d*x+c)**n)),x)
[Out] Timed out
```

3.241 $\int \frac{(a+bx)^3}{(c+dx)^5 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$

Optimal. Leaf size=75

$$\frac{(a+bx)^4\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-4/n}\text{Ei}\left(\frac{4\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^4(bc-ad)}$$

```
[Out] (b*x+a)^4*Ei(4*ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*d+b*c)/n/((e*((b*x+a)/(d*x+
c))^n)^(4/n))/(d*x+c)^4
```

Rubi [A] time = 0.08, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.029$, Rules used = {2510}

$$\frac{(a+bx)^4\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-4/n}\text{Ei}\left(\frac{4\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^4(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^3/((c + d*x)^5*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] ((a + b*x)^4*ExpIntegralEi[(4*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a
*d)*n*(e*((a + b*x)/(c + d*x))^n)^(4/n)*(c + d*x)^4)
```

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.))/Log[(e_.)*((f_.
)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)], x_Symbol]
:> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q)^r])/(p*r)])/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q)^r)^((m + 1)/(p*r))), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
 r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{(a+bx)^3}{(c+dx)^5 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{(a+bx)^4\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-4/n}\text{Ei}\left(\frac{4\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(c+dx)^4}$$

Mathematica [A] time = 0.03, size = 75, normalized size = 1.00

$$\frac{(a+bx)^4\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-4/n}\text{Ei}\left(\frac{4\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^4(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^3/((c + d*x)^5*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] ((a + b*x)^4*ExpIntegralEi[(4*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a
*d)*n*(e*((a + b*x)/(c + d*x))^n)^(4/n)*(c + d*x)^4)
```

fricas [A] time = 0.87, size = 110, normalized size = 1.47

$$\frac{\text{log\_integral}\left(\frac{\left(b^4x^4+4\,ab^3x^3+6\,a^2b^2x^2+4\,a^3bx+a^4\right)e^{\frac{4}{n}}}{d^4x^4+4\,cd^3x^3+6\,c^2d^2x^2+4\,c^3dx+c^4}\right)}{(bc-ad)e^{\frac{4}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^3/(d*x+c)^5/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fric
as")
```

```
[Out] log_integral((b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x + a^4)*e^(4
/n)/(d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4))/((b*c - a*d)
*e^(4/n)*n)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^3/(d*x+c)^5/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac
")
```

```
[Out] Timed out
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^3}{(dx+c)^5 \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^3/(d*x+c)^5/ln(e*((b*x+a)/(d*x+c))^n),x)
```

```
[Out] int((b*x+a)^3/(d*x+c)^5/ln(e*((b*x+a)/(d*x+c))^n),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^3}{(dx+c)^5 \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^3/(d*x+c)^5/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="maxi
ma")
```

```
[Out] integrate((b*x + a)^3/((d*x + c)^5*log(e*((b*x + a)/(d*x + c))^n)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)^3}{\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\,(c+d\,x)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)^3/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^5),x)
[Out] int((a + b*x)^3/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^5), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**3/(d*x+c)**5/ln(e*((b*x+a)/(d*x+c))**n),x)
[Out] Timed out
```

3.242 $\int \frac{(a+bx)^2}{(c+dx)^4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$

Optimal. Leaf size=75

$$\frac{(a+bx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-3/n} \operatorname{Ei}\left(\frac{3\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^3(bc-ad)}$$

```
[Out] (b*x+a)^3*Ei(3*ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*d+b*c)/n/((e*((b*x+a)/(d*x+
c))^n)^(3/n))/(d*x+c)^3
```

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.029$, Rules used = {2510}

$$\frac{(a+bx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-3/n} \operatorname{Ei}\left(\frac{3\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^3(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^2/((c + d*x)^4*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] ((a + b*x)^3*ExpIntegralEi[(3*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a
*d)*n*(e*((a + b*x)/(c + d*x))^n)^(3/n)*(c + d*x)^3)
```

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.))/Log[(e_.)*((f_.
)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)], x_Symbol]
:> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q)^r])/(p*r)])/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q)^r)^((m + 1)/(p*r))), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
 r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{(a+bx)^2}{(c+dx)^4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{(a+bx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-3/n} \operatorname{Ei}\left(\frac{3\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(c+dx)^3}$$

Mathematica [A] time = 0.03, size = 75, normalized size = 1.00

$$\frac{(a+bx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-3/n} \operatorname{Ei}\left(\frac{3\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^3(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^2/((c + d*x)^4*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] ((a + b*x)^3*ExpIntegralEi[(3*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a
*d)*n*(e*((a + b*x)/(c + d*x))^n)^(3/n)*(c + d*x)^3)
```

fricas [A] time = 0.96, size = 88, normalized size = 1.17

$$\frac{\text{log\_integral}\left(\frac{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)e^{\frac{3}{n}}}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}{(bc-ad)e^{\frac{3}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2/(d*x+c)^4/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fric
as")
```

```
[Out] log_integral((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*e^(3/n)/(d^3*x^3 + 3
*c*d^2*x^2 + 3*c^2*d*x + c^3))/((b*c - a*d)*e^(3/n)*n)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2/(d*x+c)^4/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac
")
```

```
[Out] Timed out
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^2}{(dx+c)^4\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2/(d*x+c)^4/ln(e*((b*x+a)/(d*x+c))^n),x)
```

```
[Out] int((b*x+a)^2/(d*x+c)^4/ln(e*((b*x+a)/(d*x+c))^n),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^2}{(dx+c)^4\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2/(d*x+c)^4/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="maxi
ma")
```

```
[Out] integrate((b*x + a)^2/((d*x + c)^4*log(e*((b*x + a)/(d*x + c))^n)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)^2}{\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\,(c+d\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)^2/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^4),x)
```

```
[Out] int((a + b*x)^2/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^4), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**2/(d*x+c)**4/ln(e*((b*x+a)/(d*x+c))**n),x)
```

```
[Out] Timed out
```

3.243 $\int \frac{a+bx}{(c+dx)^3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$

Optimal. Leaf size=75

$$\frac{(a+bx)^2 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-2/n} \text{Ei}\left(\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^2(bc-ad)}$$

```
[Out] (b*x+a)^2*Ei(2*ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*d+b*c)/n/((e*((b*x+a)/(d*x+
c))^n)^(2/n))/(d*x+c)^2
```

Rubi [A] time = 0.05, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.030, Rules used = {2510}

$$\frac{(a+bx)^2 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-2/n} \text{Ei}\left(\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^2(bc-ad)}$$

Antiderivative was successfully verified.

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

```
[Out] ((a + b*x)^2*ExpIntegralEi[(2*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a
*d)*n*(e*((a + b*x)/(c + d*x))^n)^(2/n)*(c + d*x)^2)
```

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.))/Log[(e_.)*((f_.
)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)], x_Symbol]
:> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q)^r])/(p*r)])/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q)^r)^((m + 1)/(p*r))), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
 r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{a+bx}{(c+dx)^3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{(a+bx)^2 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-2/n} \text{Ei}\left(\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(c+dx)^2}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 1.00

$$\frac{(a+bx)^2 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-2/n} \text{Ei}\left(\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)^2(bc-ad)}$$

Antiderivative was successfully verified.

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

```
[Out] ((a + b*x)^2*ExpIntegralEi[(2*Log[e*((a + b*x)/(c + d*x))^n])/n])/((b*c - a
*d)*n*(e*((a + b*x)/(c + d*x))^n)^(2/n)*(c + d*x)^2)
```

fricas [A] time = 0.82, size = 66, normalized size = 0.88

$$\frac{\text{log\_integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)e^{\frac{2}{n}}}{d^2x^2+2\,cdx+c^2}\right)}{(bc-ad)e^{\frac{2}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] log_integral((b^2*x^2 + 2*a*b*x + a^2)*e^(2/n)/(d^2*x^2 + 2*c*d*x + c^2))/(
(b*c - a*d)*e^(2/n)*n)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{(dx+c)^3\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(d*x+c)^3/ln(e*((b*x+a)/(d*x+c))^n),x)
```

```
[Out] int((b*x+a)/(d*x+c)^3/ln(e*((b*x+a)/(d*x+c))^n),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{(dx+c)^3\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)/((d*x + c)^3*log(e*((b*x + a)/(d*x + c))^n)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,x}{\ln\left(e\,{\left(\frac{a+b\,x}{c+d\,x}\right)}^n\right)\,{\left(c+d\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^3),x)
```

```
[Out] int((a + b*x)/(log(e*((a + b*x)/(c + d*x))^n)*(c + d*x)^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(d*x+c)**3/ln(e*((b*x+a)/(d*x+c))**n),x)
```

```
[Out] Timed out
```

3.244 $\int \frac{1}{(c+dx)^2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx$

Optimal. Leaf size=72

$$\frac{(a+bx)\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)(bc-ad)}$$

```
[Out] (b*x+a)*Ei(ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*d+b*c)/n/((e*((b*x+a)/(d*x+c))^
n)^(1/n))/(d*x+c)
```

Rubi [A] time = 0.03, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {2493}

$$\frac{(a+bx)\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((c + d*x)^2*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] ((a + b*x)*ExpIntegralEi[Log[e*((a + b*x)/(c + d*x))^n]/n])/((b*c - a*d)*n*
(e*((a + b*x)/(c + d*x))^n)^n^(-1)*(c + d*x))
```

Rule 2493

```
Int[1/(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_
.))^(r_.)]*((g_.) + (h_.)*(x_))^2), x_Symbol] :> Simp[(b*(c + d*x)*(e*(f*(a
 + b*x)^p*(c + d*x)^q)^r)^(1/(p*r))*ExpIntegralEi[-(Log[e*(f*(a + b*x)^p*(c
 + d*x)^q)^r]/(p*r))])/(h*p*r*(b*c - a*d)*(g + h*x)), x] /; FreeQ[{a, b, c,
 d, e, f, g, h, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b
*g - a*h, 0]
```

Rubi steps

$$\int \frac{1}{(c+dx)^2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx = \frac{(a+bx)\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(c+dx)}$$

Mathematica [A] time = 0.07, size = 72, normalized size = 1.00

$$\frac{(a+bx)\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{-1/n}\operatorname{Ei}\left(\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(c+dx)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((c + d*x)^2*Log[e*((a + b*x)/(c + d*x))^n]),x]
[Out] ((a + b*x)*ExpIntegralEi[Log[e*((a + b*x)/(c + d*x))^n]/n])/((b*c - a*d)*n*
(e*((a + b*x)/(c + d*x))^n)^n^(-1)*(c + d*x))
```

fricas [A] time = 0.85, size = 40, normalized size = 0.56

$$\frac{\text{log\_integral}\left(\frac{(bx+a)e^{\left(\frac{1}{n}\right)}}{dx+c}\right)}{(bc-ad)e^{\left(\frac{1}{n}\right)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fricas")
[Out] log_integral((b*x + a)*e^(1/n)/(d*x + c))/((b*c - a*d)*e^(1/n)*n)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2 \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2 \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="maxima")
[Out] integrate(1/((d*x + c)^2*log(e*((b*x + a)/(d*x + c))^n)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\,(c+d\,x)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)**2/ln(e*((b*x+a)/(d*x+c))**n),x)
[Out] Timed out
```

3.245 $\int \frac{1}{(a+bx)(c+dx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$

Optimal. Leaf size=33

$$\frac{\log\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{n(bc-ad)}$$

```
[Out] ln(ln(e*((b*x+a)/(d*x+c))^n))/(-a*d+b*c)/n
```

Rubi [A] time = 0.07, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.029, Rules used = {2504}

$$\frac{\log\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{n(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)*(c + d*x)*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] Log[Log[e*((a + b*x)/(c + d*x))^n]]/((b*c - a*d)*n)
```

Rule 2504

```
Int[(u_)/Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(
q_.))^(r_.)], x_Symbol] :> With[{h = Simplify[u*(a + b*x)*(c + d*x)]}, Simp
[(h*Log[Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]])/(p*r*(b*c - a*d)), x] /; Fre
eQ[h, x]] /; FreeQ[{a, b, c, d, e, f, p, q, r}, x] && NeQ[b*c - a*d, 0] &&
EqQ[p + q, 0]
```

Rubi steps

$$\int \frac{1}{(a+bx)(c+dx)\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{\log\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{(bc-ad)n}$$

Mathematica [A] time = 0.08, size = 34, normalized size = 1.03

$$-\frac{\log\left(\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)\right)}{n(ad-bc)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)*(c + d*x)*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] -(Log[Log[e*((a + b*x)/(c + d*x))^n]]/((-(b*c) + a*d)*n))
```

fricas [A] time = 0.93, size = 34, normalized size = 1.03

$$\frac{\log\left(n\log\left(\frac{bx+a}{dx+c}\right)+\log(e)\right)}{(bc-ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fricas
")
```

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

giac [B] time = 0.52, size = 82, normalized size = 2.48

$$\frac{\left(\frac{bc}{(bc-ad)^2}-\frac{ad}{(bc-ad)^2}\right)\log\left(\frac{1}{4}\pi^2\left(\operatorname{sgn}(bx+a)\operatorname{sgn}(dx+c)-1\right)^2n^2+\left(n\log\left(\frac{|bx+a|}{|dx+c|}\right)+1\right)^2\right)}{2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac")
```

```
[Out] 1/2*(b*c/(b*c - a*d)^2 - a*d/(b*c - a*d)^2)*log(1/4*pi^2*(sgn(b*x + a)*sgn(
d*x + c) - 1)^2*n^2 + (n*log(abs(b*x + a)/abs(d*x + c)) + 1)^2)/n
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{1}{(bx+a)(dx+c)\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(b*x+a)/(d*x+c)/ln(e*((b*x+a)/(d*x+c))^n),x)
```

maxima [A] time = 1.69, size = 37, normalized size = 1.12

$$\frac{\log\left(-\log\left((bx+a)^n\right)+\log\left((dx+c)^n\right)-\log(e)\right)}{bcn-adn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="maxima
")
```

```
[Out] log(-log((b*x + a)^n) + log((d*x + c)^n) - log(e))/(b*c*n - a*d*n)
```

mupad [B] time = 4.48, size = 33, normalized size = 1.00

$$-\frac{\ln\left(\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\right)}{a\,d\,n-b\,c\,n}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -log(log(e*((a + b*x)/(c + d*x))^n))/(a*d*n - b*c*n)
```

sympy [A] time = 82.02, size = 160, normalized size = 4.85

$$\begin{cases} -\frac{1}{(bc+bdx)\log(e)} & \text{for } a = \frac{bc}{d} \wedge n = 0 \\ -\frac{1}{bcn\log\left(\frac{bc}{cd+d^2x}+\frac{bx}{c+dx}\right)+bc\log(e)+bdnx\log\left(\frac{bc}{cd+d^2x}+\frac{bx}{c+dx}\right)+bdx\log(e)} & \text{for } a = \frac{bc}{d} \\ \frac{-\frac{\log\left(\frac{a}{b}+x\right)}{ad-bc}+\frac{\log\left(\frac{c}{d}+x\right)}{ad-bc}}{\log(e)} & \text{for } n = 0 \\ -\frac{\log\left(n\log\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)+\log(e)\right)}{adn-bcn} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((-1/((b*c + b*d*x)*log(e)), Eq(n, 0) & Eq(a, b*c/d)), (-1/(b*c*n*
log(b*c/(c*d + d**2*x) + b*x/(c + d*x)) + b*c*log(e) + b*d*n*x*log(b*c/(c*d
 + d**2*x) + b*x/(c + d*x)) + b*d*x*log(e)), Eq(a, b*c/d)), ((-log(a/b + x)
/(a*d - b*c) + log(c/d + x)/(a*d - b*c))/log(e), Eq(n, 0)), (-log(n*log(a/(
c + d*x) + b*x/(c + d*x)) + log(e))/(a*d*n - b*c*n), True))
```

3.246 $\int \frac{1}{(a+bx)^2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} \, dx$

Optimal. Leaf size=71

$$\frac{(c+dx)\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{1}{n}} \text{Ei}\left(-\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)(bc-ad)}$$

```
[Out] (e*((b*x+a)/(d*x+c))^n)^(1/n)*(d*x+c)*Ei(-ln(e*((b*x+a)/(d*x+c))^n)/n)/(-a*
d+b*c)/n/(b*x+a)
```

Rubi [A] time = 0.03, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {2493}

$$\frac{(c+dx)\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{1}{n}} \text{Ei}\left(-\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)^2*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] ((e*((a + b*x)/(c + d*x))^n)^n^(-1)*(c + d*x)*ExpIntegralEi[-(Log[e*((a + b
*x)/(c + d*x))^n]/n)])/((b*c - a*d)*n*(a + b*x))
```

Rule 2493

```
Int[1/(Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_
.))^(r_.)]*((g_.) + (h_.)*(x_))^2), x_Symbol] :> Simp[(b*(c + d*x)*(e*(f*(a
 + b*x)^p*(c + d*x)^q)^r)^(1/(p*r))*ExpIntegralEi[-(Log[e*(f*(a + b*x)^p*(c
 + d*x)^q)^r]/(p*r))])/(h*p*r*(b*c - a*d)*(g + h*x)), x] /; FreeQ[{a, b, c,
 d, e, f, g, h, p, q, r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[b
*g - a*h, 0]
```

Rubi steps

$$\int \frac{1}{(a+bx)^2 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} \, dx = \frac{\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{1}{n}} (c+dx)\text{Ei}\left(-\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(a+bx)}$$

Mathematica [A] time = 0.07, size = 71, normalized size = 1.00

$$\frac{(c+dx)\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{\frac{1}{n}} \text{Ei}\left(-\frac{\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)^2*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] ((e*((a + b*x)/(c + d*x))^n)^n^(-1)*(c + d*x)*ExpIntegralEi[-(Log[e*((a + b
*x)/(c + d*x))^n]/n)])/((b*c - a*d)*n*(a + b*x))
```

fricas [A] time = 1.07, size = 40, normalized size = 0.56

$$\frac{e^{\left(\frac{1}{n}\right)}\operatorname{log\_integral}\left(\frac{dx+c}{(bx+a)e^{\left(\frac{1}{n}\right)}}\right)}{(bc-ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)^2/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fricas")
```

```
[Out] e^(1/n)*log_integral((d*x + c)/((b*x + a)*e^(1/n)))/((b*c - a*d)*n)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)^2/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{1}{(bx+a)^2 \ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(b*x+a)^2/ln(e*((b*x+a)/(d*x+c))^n),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(bx+a)^2 \log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)^2/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^2*log(e*((b*x + a)/(d*x + c))^n)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\,(a+b\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+bx)^2 \log\left(e\left(\frac{a}{c+dx}+\frac{bx}{c+dx}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(1/((a + b*x)**2*log(e*(a/(c + d*x) + b*x/(c + d*x))**n)), x)
```

3.247 $\int \frac{c+dx}{(a+bx)^3 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx$

Optimal. Leaf size=75

$$\frac{(c+dx)^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{2/n}\text{Ei}\left(-\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)^2(bc-ad)}$$

```
[Out] (e*((b*x+a)/(d*x+c))^n)^(2/n)*(d*x+c)^2*Ei(-2*ln(e*((b*x+a)/(d*x+c))^n)/n)/
(-a*d+b*c)/n/(b*x+a)^2
```

Rubi [A] time = 0.05, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.030, Rules used = {2510}

$$\frac{(c+dx)^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{2/n}\text{Ei}\left(-\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)^2(bc-ad)}$$

Antiderivative was successfully verified.

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

```
[Out] ((e*((a + b*x)/(c + d*x))^n)^(2/n)*(c + d*x)^2*ExpIntegralEi[(-2*Log[e*((a
+ b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(a + b*x)^2)
```

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.))/Log[(e_.)*((f_.
)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)], x_Symbol]
:> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q)^r])/(p*r)])/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q)^r)^((m + 1)/(p*r))), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
 r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{c+dx}{(a+bx)^3\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}\,dx=\frac{\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{2/n}(c+dx)^2\text{Ei}\left(-\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(a+bx)^2}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 1.00

$$\frac{(c+dx)^2\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{2/n}\text{Ei}\left(-\frac{2\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)^2(bc-ad)}$$

Antiderivative was successfully verified.

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

```
[Out] ((e*((a + b*x)/(c + d*x))^n)^(2/n)*(c + d*x)^2*ExpIntegralEi[(-2*Log[e*((a
+ b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(a + b*x)^2)
```

fricas [A] time = 1.00, size = 66, normalized size = 0.88

$$\frac{e^{\frac{2}{n}}\,\mathrm{log\_integral}\left(\frac{d^2x^2+2\,cdx+c^2}{\left(b^2x^2+2\,abx+a^2\right)e^{\frac{2}{n}}}\right)}{(bc-ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] e^(2/n)*log_integral((d^2*x^2 + 2*c*d*x + c^2)/((b^2*x^2 + 2*a*b*x + a^2)*e
^(2/n)))/((b*c - a*d)*n)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{dx+c}{(bx+a)^3\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)/(b*x+a)^3/ln(e*((b*x+a)/(d*x+c))^n),x)
```

```
[Out] int((d*x+c)/(b*x+a)^3/ln(e*((b*x+a)/(d*x+c))^n),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{dx+c}{(bx+a)^3\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)/((b*x + a)^3*log(e*((b*x + a)/(d*x + c))^n)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{c+d\,x}{\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\,(a+b\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)^3),x)
```

```
[Out] int((c + d*x)/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(b*x+a)**3/ln(e*((b*x+a)/(d*x+c))**n),x)
[Out] Timed out
```

3.248 $\int \frac{(c+dx)^2}{(a+bx)^4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx$

Optimal. Leaf size=75

$$\frac{(c+dx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{3/n} \text{Ei}\left(-\frac{3\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)^3(bc-ad)}$$

```
[Out] (e*((b*x+a)/(d*x+c))^n)^(3/n)*(d*x+c)^3*Ei(-3*ln(e*((b*x+a)/(d*x+c))^n)/n)/
(-a*d+b*c)/n/(b*x+a)^3
```

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.029$, Rules used = {2510}

$$\frac{(c+dx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{3/n} \text{Ei}\left(-\frac{3\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)^3(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2/((a + b*x)^4*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] ((e*((a + b*x)/(c + d*x))^n)^(3/n)*(c + d*x)^3*ExpIntegralEi[(-3*Log[e*((a
+ b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(a + b*x)^3)
```

Rule 2510

```
Int[(((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.))/Log[(e_.)*((f_.
)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))^(r_.)], x_Symbol]
:> Simp[((a + b*x)^(m + 1)*(c + d*x)^(n + 1)*ExpIntegralEi[((m + 1)*Log[e*(
f*(a + b*x)^p*(c + d*x)^q)^r])/(p*r)])/(p*r*(b*c - a*d)*(e*(f*(a + b*x)^p*(
c + d*x)^q)^r)^((m + 1)/(p*r))), x] /; FreeQ[{a, b, c, d, e, f, m, n, p, q,
 r}, x] && NeQ[b*c - a*d, 0] && EqQ[p + q, 0] && EqQ[m + n + 2, 0] && NeQ[m
, -1]
```

Rubi steps

$$\int \frac{(c+dx)^2}{(a+bx)^4 \log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)} dx = \frac{\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{3/n} (c+dx)^3 \text{Ei}\left(-\frac{3\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{(bc-ad)n(a+bx)^3}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 1.00

$$\frac{(c+dx)^3 \left(e\left(\frac{a+bx}{c+dx}\right)^n\right)^{3/n} \text{Ei}\left(-\frac{3\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)}{n}\right)}{n(a+bx)^3(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2/((a + b*x)^4*Log[e*((a + b*x)/(c + d*x))^n]),x]
```

```
[Out] ((e*((a + b*x)/(c + d*x))^n)^(3/n)*(c + d*x)^3*ExpIntegralEi[(-3*Log[e*((a
+ b*x)/(c + d*x))^n])/n])/((b*c - a*d)*n*(a + b*x)^3)
```

fricas [A] time = 0.63, size = 88, normalized size = 1.17

$$\frac{e^{\frac{3}{n}}\operatorname{log\_integral}\left(\frac{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)e^{\frac{3}{n}}}\right)}{(bc-ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(b*x+a)^4/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="fric
as")
```

```
[Out] e^(3/n)*log_integral((d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)/((b^3*x^3 +
3*a*b^2*x^2 + 3*a^2*b*x + a^3)*e^(3/n)))/((b*c - a*d)*n)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(b*x+a)^4/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="giac
")
```

```
[Out] Timed out
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^2}{(bx+a)^4\ln\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2/(b*x+a)^4/ln(e*((b*x+a)/(d*x+c))^n),x)
```

```
[Out] int((d*x+c)^2/(b*x+a)^4/ln(e*((b*x+a)/(d*x+c))^n),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^2}{(bx+a)^4\log\left(e\left(\frac{bx+a}{dx+c}\right)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(b*x+a)^4/log(e*((b*x+a)/(d*x+c))^n),x, algorithm="maxi
ma")
```

```
[Out] integrate((d*x + c)^2/((b*x + a)^4*log(e*((b*x + a)/(d*x + c))^n)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(c+d\,x)^2}{\ln\left(e\left(\frac{a+b\,x}{c+d\,x}\right)^n\right)\,(a+b\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^2/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)^4),x)
```

```
[Out] int((c + d*x)^2/(log(e*((a + b*x)/(c + d*x))^n)*(a + b*x)^4), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2/(b*x+a)**4/ln(e*((b*x+a)/(d*x+c))**n),x)
```

```
[Out] Timed out
```

3.249 $\int \frac{\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^4}{(f+gx)(ah+bhx)}\,dx$

Optimal. Leaf size=361

$$\frac{24B^3n^3\mathrm{Li}_4\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{h(bf-ag)}+\frac{12B^2n^2\mathrm{Li}_3\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B\log\left(e(a+bx)^n(c+\ldots\right.\right.}{h(bf-ag)}$$

```
[Out] -(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^4*ln(1-(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*
x+a))/(-a*g+b*f)/h+4*B*n*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3*polylog(2,(-a*
g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+12*B^2*n^2*(A+B*ln(e*(b*x+a
)^n/((d*x+c)^n)))^2*polylog(3,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+
b*f)/h+24*B^3*n^3*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))*polylog(4,(-a*g+b*f)*(d
*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+24*B^4*n^4*polylog(5,(-a*g+b*f)*(d*x
+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h
```

Rubi [B] time = 1.93, antiderivative size = 1021, normalized size of antiderivative = 2.83, number of steps used = 20, number of rules used = 9, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.209, Rules used = {6742, 36, 31, 2503, 2502, 2315, 2506, 6610, 2508}

$$\frac{\log(a+bx)A^4}{(bf-ag)h}-\frac{\log(f+gx)A^4}{(bf-ag)h}-\frac{4B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)A^3}{(bf-ag)h}+\frac{4Bn\mathrm{PolyLog}\left(2,\frac{(bc-ad)\ldots}{(df-cg)\ldots}\right.}{(bf-ag)\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^4/((f + g*x)*(a*h + b*h*x)),x]
```

```
[Out] (A^4*Log[a + b*x])/((b*f - a*g)*h) - (A^4*Log[f + g*x])/((b*f - a*g)*h) - (
4*A^3*B*Log[(e*(a + b*x)^n)/(c + d*x)^n]*Log[-(((b*c - a*d)*(f + g*x))/((d*
f - c*g)*(a + b*x)))]])/((b*f - a*g)*h) - (6*A^2*B^2*Log[(e*(a + b*x)^n)/(c
+ d*x)^n]^2*Log[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))]])/((b*f
- a*g)*h) - (4*A*B^3*Log[(e*(a + b*x)^n)/(c + d*x)^n]^3*Log[-(((b*c - a*d)*
(f + g*x))/((d*f - c*g)*(a + b*x)))]])/((b*f - a*g)*h) - (B^4*Log[(e*(a + b*
x)^n)/(c + d*x)^n]^4*Log[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))
]])/((b*f - a*g)*h) + (4*A^3*B*n*PolyLog[2, 1 + ((b*c - a*d)*(f + g*x))/((d*
f - c*g)*(a + b*x))]])/((b*f - a*g)*h) + (12*A^2*B^2*n*Log[(e*(a + b*x)^n)/(
c + d*x)^n]*PolyLog[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))]
)/((b*f - a*g)*h) + (12*A*B^3*n*Log[(e*(a + b*x)^n)/(c + d*x)^n]^2*PolyLog[
2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))]])/((b*f - a*g)*h) +
(4*B^4*n*Log[(e*(a + b*x)^n)/(c + d*x)^n]^3*PolyLog[2, 1 + ((b*c - a*d)*(f
+ g*x))/((d*f - c*g)*(a + b*x))]])/((b*f - a*g)*h) + (12*A^2*B^2*n^2*PolyLog
[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))]])/((b*f - a*g)*h) +
 (24*A*B^3*n^2*Log[(e*(a + b*x)^n)/(c + d*x)^n]*PolyLog[3, 1 + ((b*c - a*d)
*(f + g*x))/((d*f - c*g)*(a + b*x))]])/((b*f - a*g)*h) + (12*B^4*n^2*Log[(e*
(a + b*x)^n)/(c + d*x)^n]^2*PolyLog[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f -
c*g)*(a + b*x))]])/((b*f - a*g)*h) + (24*A*B^3*n^3*PolyLog[4, 1 + ((b*c - a*
d)*(f + g*x))/((d*f - c*g)*(a + b*x))]])/((b*f - a*g)*h) + (24*B^4*n^3*Log[(
e*(a + b*x)^n)/(c + d*x)^n]*PolyLog[4, 1 + ((b*c - a*d)*(f + g*x))/((d*f -
c*g)*(a + b*x))]])/((b*f - a*g)*h) + (24*B^4*n^4*PolyLog[5, 1 + ((b*c - a*d)
*(f + g*x))/((d*f - c*g)*(a + b*x))]])/((b*f - a*g)*h)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Coeff[Simplify[1/(u*(a + b*x))],
 x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b
*x)^p*(c + d*x)^q)^r]^s*Log[-(((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
)))])/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1)*Log[-(((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x)))])/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0]] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
 x]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2508

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_)*PolyLog[n_, v_], x_Symbol] :> With[{g = Simplify[(v*(c +
 d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, Simp[(h*PolyLog[n
+ 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] - Dist[h*p*
r*s, Int[(PolyLog[n + 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/(
(a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e,
f, n, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
```

]

Rubi steps

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^4}{(f+gx)(ah+bhx)}\,dx=\int\left(\frac{A^4}{h(a+bx)(f+gx)}+\frac{4A^3B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{h(a+bx)(f+gx)}+\frac{6A^2I}{}\right.$$

$$=\frac{A^4\int\frac{1}{(a+bx)(f+gx)}\,dx}{h}+\frac{\left(4A^3B\right)\int\frac{\log(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(f+gx)}\,dx}{h}+\frac{\left(6A^2B^2\right.}{}$$

$$=-\frac{4A^3B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf-ag)h}-\frac{6A^2B^2\log}{}$$

$$=\frac{A^4\log(a+bx)}{(bf-ag)h}-\frac{A^4\log(f+gx)}{(bf-ag)h}-\frac{4A^3B\log\left(e(a+bx)^n(c+dx)\right.}{(bf-ag}$$

$$=\frac{A^4\log(a+bx)}{(bf-ag)h}-\frac{A^4\log(f+gx)}{(bf-ag)h}-\frac{4A^3B\log\left(e(a+bx)^n(c+dx)\right.}{(bf-ag}$$

$$=\frac{A^4\log(a+bx)}{(bf-ag)h}-\frac{A^4\log(f+gx)}{(bf-ag)h}-\frac{4A^3B\log\left(e(a+bx)^n(c+dx)\right.}{(bf-ag}$$

$$=\frac{A^4\log(a+bx)}{(bf-ag)h}-\frac{A^4\log(f+gx)}{(bf-ag)h}-\frac{4A^3B\log\left(e(a+bx)^n(c+dx)\right.}{(bf-ag}$$

Mathematica [F] time = 4.41, size = 0, normalized size = 0.00

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^4}{(f+gx)(ah+bhx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^4/((f + g*x)*(a*h + b*h*
x)),x]
```

```
[Out] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^4/((f + g*x)*(a*h + b*h*
x)), x]
```

fricas [F] time = 1.09, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{B^4\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^4+4\,AB^3\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^3+6\,A^2B^2\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^2+4\,A^3B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A^4}{bghx^2+afh+\left(bf+ag\right)hx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^4/(g*x+f)/(b*h*x+a*h),x, algor
ithm="fricas")
```

```
[Out] integral((B^4*log((b*x + a)^n*e/(d*x + c)^n)^4 + 4*A*B^3*log((b*x + a)^n*e/
(d*x + c)^n)^3 + 6*A^2*B^2*log((b*x + a)^n*e/(d*x + c)^n)^2 + 4*A^3*B*log((
b*x + a)^n*e/(d*x + c)^n) + A^4)/(b*g*h*x^2 + a*f*h + (b*f + a*g)*h*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A\right)^4}{(bhx+ah)\left(gx+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^4/(g*x+f)/(b*h*x+a*h),x, algor
ithm="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^4/((b*h*x + a*h)*(g*x + f)
), x)
```

maple [F] time = 5.97, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\,(bx+a)^n\,(dx+c)^{-n}\right)+A\right)^4}{\left(gx+f\right)(bhx+ah)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^4/(g*x+f)/(b*h*x+a*h),x)
```

```
[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^4/(g*x+f)/(b*h*x+a*h),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^4\left(\frac{\log(bx+a)}{\left(bf-ag\right)h}-\frac{\log\left(gx+f\right)}{\left(bf-ag\right)h}\right)+\int \frac{B^4\log\left((bx+a)^n\right)^4+B^4\log\left((dx+c)^n\right)^4+B^4\log(e)^4+4\,AB^3\log(e)^3+6\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^4/(g*x+f)/(b*h*x+a*h),x, algor
ithm="maxima")
```

```
[Out] A^4*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) + integra
te((B^4*log((b*x + a)^n)^4 + B^4*log((d*x + c)^n)^4 + B^4*log(e)^4 + 4*A*B^
3*log(e)^3 + 6*A^2*B^2*log(e)^2 + 4*A^3*B*log(e) + 4*(B^4*log(e) + A*B^3)*l
og((b*x + a)^n)^3 - 4*(B^4*log((b*x + a)^n) + B^4*log(e) + A*B^3)*log((d*x
+ c)^n)^3 + 6*(B^4*log(e)^2 + 2*A*B^3*log(e) + A^2*B^2)*log((b*x + a)^n)^2
+ 6*(B^4*log((b*x + a)^n)^2 + B^4*log(e)^2 + 2*A*B^3*log(e) + A^2*B^2 + 2*(
B^4*log(e) + A*B^3)*log((b*x + a)^n))*log((d*x + c)^n)^2 + 4*(B^4*log(e)^3
+ 3*A*B^3*log(e)^2 + 3*A^2*B^2*log(e) + A^3*B)*log((b*x + a)^n) - 4*(B^4*lo
g((b*x + a)^n)^3 + B^4*log(e)^3 + 3*A*B^3*log(e)^2 + 3*A^2*B^2*log(e) + A^3
*B + 3*(B^4*log(e) + A*B^3)*log((b*x + a)^n)^2 + 3*(B^4*log(e)^2 + 2*A*B^3*
log(e) + A^2*B^2)*log((b*x + a)^n))*log((d*x + c)^n))/(b*g*h*x^2 + a*f*h +
(b*f*h + a*g*h)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(A+B\,\ln\left(\frac{e\,{(a+b\,x)}^n}{{(c+d\,x)}^n}\right)\right)}^4}{\left(f+g\,x\right)\,\left(a\,h+b\,h\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^4/((f + g*x)*(a*h + b*h*x)),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^4/((f + g*x)*(a*h + b*h*x)), x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**4/(g*x+f)/(b*h*x+a*h),x)
[Out] Timed out
```

3.250 $\int \frac{\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^3}{(f+gx)(ah+bhx)}\,dx$

Optimal. Leaf size=282

$$\frac{6B^2n^2\text{Li}_3\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{h(bf-ag)}+\frac{3Bn\text{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+\right.}{h(bf-ag)}$$

```
[Out] -(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3*ln(1-(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*
x+a))/(-a*g+b*f)/h+3*B*n*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2*polylog(2,(-a*
g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+6*B^2*n^2*(A+B*ln(e*(b*x+a)
^n/((d*x+c)^n)))*polylog(3,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f
)/h+6*B^3*n^3*polylog(4,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h
```

Rubi [B] time = 1.21, antiderivative size = 656, normalized size of antiderivative = 2.33, number of steps used = 15, number of rules used = 9, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.209$, Rules used = {6742, 36, 31, 2503, 2502, 2315, 2506, 6610, 2508}

$$\frac{3A^2Bn\text{PolyLog}\left(2,\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}+1\right)}{h(bf-ag)}+\frac{6AB^2n\log\left(e(a+bx)^n(c+dx)^{-n}\right)\text{PolyLog}\left(2,\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}+1\right)}{h(bf-ag)}+\frac{6AB^2n^2\text{P}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/((f + g*x)*(a*h + b*h*x)),x]
```

```
[Out] (A^3*Log[a + b*x])/((b*f - a*g)*h) - (A^3*Log[f + g*x])/((b*f - a*g)*h) - (
3*A^2*B*Log[(e*(a + b*x)^n)/(c + d*x)^n]*Log[-(((b*c - a*d)*(f + g*x))/((d*
f - c*g)*(a + b*x)))])/((b*f - a*g)*h) - (3*A*B^2*Log[(e*(a + b*x)^n)/(c +
d*x)^n]^2*Log[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f -
a*g)*h) - (B^3*Log[(e*(a + b*x)^n)/(c + d*x)^n]^3*Log[-(((b*c - a*d)*(f + g
*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h) + (3*A^2*B*n*PolyLog[2, 1 +
 ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*A*B
^2*n*Log[(e*(a + b*x)^n)/(c + d*x)^n]*PolyLog[2, 1 + ((b*c - a*d)*(f + g*x)
)/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (3*B^3*n*Log[(e*(a + b*x)^n)/
(c + d*x)^n]^2*PolyLog[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x
))])/((b*f - a*g)*h) + (6*A*B^2*n^2*PolyLog[3, 1 + ((b*c - a*d)*(f + g*x))/
((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*B^3*n^2*Log[(e*(a + b*x)^n)/
(c + d*x)^n]*PolyLog[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))
])/((b*f - a*g)*h) + (6*B^3*n^3*PolyLog[4, 1 + ((b*c - a*d)*(f + g*x))/((d*
f - c*g)*(a + b*x))])/((b*f - a*g)*h)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Coeff[Simplify[1/(u*(a + b*x))],
 x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b
*x)^p*(c + d*x)^q)^r]^s*Log[-(((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
)))])/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1)*Log[-(((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x)))])/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0]] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
 x]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2508

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_)*PolyLog[n_, v_], x_Symbol] :> With[{g = Simplify[(v*(c +
 d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, Simp[(h*PolyLog[n
+ 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] - Dist[h*p*
r*s, Int[(PolyLog[n + 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/(
(a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e,
f, n, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^3}{(f+gx)(ah+bhx)}\,dx = \int\left(\frac{A^3}{h(a+bx)(f+gx)} + \frac{3A^2B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{h(a+bx)(f+gx)} + \frac{3AB^2\log}{}\right.$$

$$= \frac{A^3\int\frac{1}{(a+bx)(f+gx)}\,dx}{h} + \frac{\left(3A^2B\right)\int\frac{\log(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(f+gx)}\,dx}{h} + \frac{\left(3AB^2\right)\int}{}$$

$$= -\frac{3A^2B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf-ag)h} - \frac{3AB^2\log^2(}{}$$

$$= \frac{A^3\log(a+bx)}{(bf-ag)h} - \frac{A^3\log(f+gx)}{(bf-ag)h} - \frac{3A^2B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(bf-ag)h}$$

$$= \frac{A^3\log(a+bx)}{(bf-ag)h} - \frac{A^3\log(f+gx)}{(bf-ag)h} - \frac{3A^2B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(bf-ag)h}$$

$$= \frac{A^3\log(a+bx)}{(bf-ag)h} - \frac{A^3\log(f+gx)}{(bf-ag)h} - \frac{3A^2B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(bf-ag)h}$$

Mathematica [F] time = 3.23, size = 0, normalized size = 0.00

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^3}{(f+gx)(ah+bhx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/((f + g*x)*(a*h + b*h*
x)),x]
```

```
[Out] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/((f + g*x)*(a*h + b*h*
x)), x]
```

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{B^3\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^3 + 3\,AB^2\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^2 + 3\,A^2B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A^3}{bghx^2 + afh + \left(bf+ag\right)hx}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(g*x+f)/(b*h*x+a*h),x, algor
ithm="fricas")
```

```
[Out] integral((B^3*log((b*x + a)^n*e/(d*x + c)^n)^3 + 3*A*B^2*log((b*x + a)^n*e/
(d*x + c)^n)^2 + 3*A^2*B*log((b*x + a)^n*e/(d*x + c)^n) + A^3)/(b*g*h*x^2 +
 a*f*h + (b*f + a*g)*h*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\right)^3}{(bhx+ah)\left(gx+f\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(g*x+f)/(b*h*x+a*h),x, algor
ithm="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^3/((b*h*x + a*h)*(g*x + f)
), x)
```

maple [F] time = 3.19, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\,(bx+a)^{n}\,(dx+c)^{-n}\right)+A\right)^{3}}{\left(gx+f\right)(bhx+ah)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/(g*x+f)/(b*h*x+a*h),x)
```

```
[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/(g*x+f)/(b*h*x+a*h),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^{3}\left(\frac{\log(bx+a)}{\left(bf-ag\right)h}-\frac{\log\left(gx+f\right)}{\left(bf-ag\right)h}\right)-\int -\frac{B^{3}\log\left((bx+a)^{n}\right)^{3}-B^{3}\log\left((dx+c)^{n}\right)^{3}+B^{3}\log(e)^{3}+3\,AB^{2}\log(e)^{2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(g*x+f)/(b*h*x+a*h),x, algor
ithm="maxima")
```

```
[Out] A^3*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) - integra
te(-(B^3*log((b*x + a)^n)^3 - B^3*log((d*x + c)^n)^3 + B^3*log(e)^3 + 3*A*B
^2*log(e)^2 + 3*A^2*B*log(e) + 3*(B^3*log(e) + A*B^2)*log((b*x + a)^n)^2 +
3*(B^3*log((b*x + a)^n) + B^3*log(e) + A*B^2)*log((d*x + c)^n)^2 + 3*(B^3*l
og(e)^2 + 2*A*B^2*log(e) + A^2*B)*log((b*x + a)^n) - 3*(B^3*log((b*x + a)^n
)^2 + B^3*log(e)^2 + 2*A*B^2*log(e) + A^2*B + 2*(B^3*log(e) + A*B^2)*log((b
*x + a)^n))*log((d*x + c)^n))/(b*g*h*x^2 + a*f*h + (b*f*h + a*g*h)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(A+B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)\right)}^3}{\left(f+g\,x\right)\,\left(a\,h+b\,h\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3/((f + g*x)*(a*h + b*h*x)),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3/((f + g*x)*(a*h + b*h*x)), x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**3/(g*x+f)/(b*h*x+a*h),x)
```

```
[Out] Timed out
```

3.251 $\int \frac{\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^2}{(f+gx)(ah+bhx)}\,dx$

Optimal. Leaf size=203

$$\frac{2Bn\text{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{h(bf-ag)}-\frac{\log\left(1-\frac{(c+dx)(bf-ag)}{(a+bx)(df-cg)}\right)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right.}{h(bf-ag)}$$

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

Rubi [A] time = 0.76, antiderivative size = 371, normalized size of antiderivative = 1.83, number of steps used = 11, number of rules used = 8, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.186, Rules used = {6742, 36, 31, 2503, 2502, 2315, 2506, 6610}

$$\frac{2ABn\text{PolyLog}\left(2,\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}+1\right)}{h(bf-ag)}+\frac{2B^2n\log\left(e(a+bx)^n(c+dx)^{-n}\right)\text{PolyLog}\left(2,\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}+1\right)}{h(bf-ag)}+\frac{2B^2n^2\text{PolyL}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/((f + g*x)*(a*h + b*h*x)),x]
```

```
[Out] (A^2*Log[a + b*x])/((b*f - a*g)*h) - (A^2*Log[f + g*x])/((b*f - a*g)*h) - (
2*A*B*Log[(e*(a + b*x)^n)/(c + d*x)^n]*Log[-(((b*c - a*d)*(f + g*x))/((d*f
- c*g)*(a + b*x)))])/((b*f - a*g)*h) - (B^2*Log[(e*(a + b*x)^n)/(c + d*x)^n
]^2*Log[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h
) + (2*A*B*n*PolyLog[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))
])/((b*f - a*g)*h) + (2*B^2*n*Log[(e*(a + b*x)^n)/(c + d*x)^n]*PolyLog[2, 1
 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (2*B
^2*n^2*PolyLog[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b
*f - a*g)*h)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Coeff[Simplify[1/(u*(a + b*x))],
 x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b
*x)^p*(c + d*x)^q)^r]^s*Log[-(((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
)))])/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1)*Log[-(((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x)))])/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0]] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
 x]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}{(f+gx)(ah+bhx)}\,dx = \int \left(\frac{A^2}{h(a+bx)(f+gx)} + \frac{2AB\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{h(a+bx)(f+gx)} + \frac{B^2\log\ldots}{\ldots}\right.$$

$$= \frac{A^2\int\frac{1}{(a+bx)(f+gx)}\,dx}{h} + \frac{(2AB)\int\frac{\log(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(f+gx)}\,dx}{h} + \frac{B^2\int\frac{\log^2(\ldots}{\ldots}}{\ldots}$$

$$= -\frac{2AB\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf-ag)h} - \frac{B^2\log^2(e\ldots}{\ldots}$$

$$= \frac{A^2\log(a+bx)}{(bf-ag)h} - \frac{A^2\log(f+gx)}{(bf-ag)h} - \frac{2AB\log\left(e(a+bx)^n(c+dx)^{-\ldots}\right.}{(bf-ag\ldots}$$

$$= \frac{A^2\log(a+bx)}{(bf-ag)h} - \frac{A^2\log(f+gx)}{(bf-ag)h} - \frac{2AB\log\left(e(a+bx)^n(c+dx)^{-\ldots}\right.}{(bf-ag\ldots}$$

Mathematica [B] time = 1.05, size = 1415, normalized size = 6.97

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/((f + g*x)*(a*h + b*h*
x)),x]
```

```
[Out] (3*Log[a + b*x]*(A + B*(-(n*Log[a + b*x]) + n*Log[c + d*x] + Log[(e*(a + b*
x)^n)/(c + d*x)^n]))^2 - 3*(A + B*(-(n*Log[a + b*x]) + n*Log[c + d*x] + Log
[(e*(a + b*x)^n)/(c + d*x)^n]))^2*Log[f + g*x] + 3*B*n*(A + B*(-(n*Log[a +
b*x]) + n*Log[c + d*x] + Log[(e*(a + b*x)^n)/(c + d*x)^n]))*(Log[a + b*x]^2
 - 2*(Log[a + b*x]*Log[(b*(f + g*x))/(b*f - a*g)] + PolyLog[2, (g*(a + b*x)
)/(-(b*f) + a*g)])) - 6*A*B*n*(Log[c + d*x]*(Log[(d*(a + b*x))/(-(b*c) + a*
d)] - Log[(d*(f + g*x))/(d*f - c*g)]) + PolyLog[2, (b*(c + d*x))/(b*c - a*d
)] - PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)]) + 6*B^2*n*(n*Log[a + b*x] -
n*Log[c + d*x] - Log[(e*(a + b*x)^n)/(c + d*x)^n])*(Log[c + d*x]*(Log[(d*(a
 + b*x))/(-(b*c) + a*d)] - Log[(d*(f + g*x))/(d*f - c*g)]) + PolyLog[2, (b*
(c + d*x))/(b*c - a*d)] - PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)]) + B^2*n
^2*(Log[a + b*x]^2*(Log[a + b*x] - 3*Log[(b*(f + g*x))/(b*f - a*g)]) - 6*Lo
g[a + b*x]*PolyLog[2, (g*(a + b*x))/(-(b*f) + a*g)] + 6*PolyLog[3, (g*(a +
b*x))/(-(b*f) + a*g)]) + 3*B^2*n^2*(Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c
 + d*x]^2 - Log[c + d*x]^2*Log[(d*(f + g*x))/(d*f - c*g)] + 2*Log[c + d*x]*
PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 2*Log[c + d*x]*PolyLog[2, (g*(c + d
*x))/(-(d*f) + c*g)] - 2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)] + 2*PolyLog[
3, (g*(c + d*x))/(-(d*f) + c*g)]) - 6*B^2*n^2*((Log[a + b*x]^2*(Log[c + d*x
] - Log[(b*(c + d*x))/(b*c - a*d)]))/2 - Log[a + b*x]*Log[c + d*x]*Log[(b*(
f + g*x))/(b*f - a*g)] - (Log[(g*(c + d*x))/(-(d*f) + c*g)]*(-2*Log[a + b*x
] + Log[(g*(c + d*x))/(-(d*f) + c*g)])*(Log[(b*(f + g*x))/(b*f - a*g)] - Lo
g[(d*(f + g*x))/(d*f - c*g)]))/2 + Log[(g*(c + d*x))/(-(d*f) + c*g)]*Log[((
b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))]*(Log[(b*(f + g*x))/(b*f - a*
g)] - Log[(d*(f + g*x))/(d*f - c*g)]) - (Log[((b*f - a*g)*(c + d*x))/((d*f
- c*g)*(a + b*x))]^2*(Log[(-(b*c) + a*d)/(d*(a + b*x))] + Log[(b*(f + g*x))
/(b*f - a*g)] - Log[((-(b*c) + a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))]))/2
 - Log[a + b*x]*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] - (Log[c + d*x] -
Log[((b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))])*PolyLog[2, (g*(a + b*
x))/(-(b*f) + a*g)] - (Log[a + b*x] + Log[((b*f - a*g)*(c + d*x))/((d*f - c
*g)*(a + b*x))])*PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)] - Log[((b*f - a*g
)*(c + d*x))/((d*f - c*g)*(a + b*x))]*(PolyLog[2, (b*(c + d*x))/(d*(a + b*x
))] - PolyLog[2, ((b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))]) + PolyLo
g[3, (d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[3, (g*(a + b*x))/(-(b*f) + a*g
)] + PolyLog[3, (g*(c + d*x))/(-(d*f) + c*g)] + PolyLog[3, (b*(c + d*x))/(d
*(a + b*x))] - PolyLog[3, ((b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))])
)/(3*(b*f - a*g)*h)
```

fricas [F] time = 1.04, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{B^{2} \log\left(\frac{(bx+a)^{n} e}{(dx+c)^{n}}\right)^{2} + 2\,AB \log\left(\frac{(bx+a)^{n} e}{(dx+c)^{n}}\right) + A^{2}}{bghx^{2} + afh + \left(bf + ag\right)hx}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(g*x+f)/(b*h*x+a*h),x, algor
ithm="fricas")
```

```
[Out] integral((B^2*log((b*x + a)^n*e/(d*x + c)^n)^2 + 2*A*B*log((b*x + a)^n*e/(d
*x + c)^n) + A^2)/(b*g*h*x^2 + a*f*h + (b*f + a*g)*h*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B \log\left(\frac{(bx+a)^{n} e}{(dx+c)^{n}}\right) + A\right)^{2}}{(bhx + ah)\left(gx + f\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(g*x+f)/(b*h*x+a*h),x, algor
ithm="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^2/((b*h*x + a*h)*(g*x + f)
), x)
```

maple [F] time = 3.17, size = 0, normalized size = 0.00

$$\int \frac{\left(B \ln \left(e \left(bx+a\right)^{n} \left(dx+c\right)^{-n}\right)+A\right)^{2}}{\left(gx+f\right) \left(bhx+ah\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2/(g*x+f)/(b*h*x+a*h),x)
```

```
[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2/(g*x+f)/(b*h*x+a*h),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^{2}\left(\frac{\log\left(bx+a\right)}{\left(bf-ag\right)h}-\frac{\log\left(gx+f\right)}{\left(bf-ag\right)h}\right)+\int \frac{B^{2} \log\left(\left(bx+a\right)^{n}\right)^{2}+B^{2} \log\left(\left(dx+c\right)^{n}\right)^{2}+B^{2} \log(e)^{2}+2\,AB\log(e)+2}{bghx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(g*x+f)/(b*h*x+a*h),x, algor
ithm="maxima")
```

```
[Out] A^2*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) + integra
te((B^2*log((b*x + a)^n)^2 + B^2*log((d*x + c)^n)^2 + B^2*log(e)^2 + 2*A*B*
log(e) + 2*(B^2*log(e) + A*B)*log((b*x + a)^n) - 2*(B^2*log((b*x + a)^n) +
B^2*log(e) + A*B)*log((d*x + c)^n))/(b*g*h*x^2 + a*f*h + (b*f*h + a*g*h)*x)
, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(A+B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)\right)}^2}{\left(f+g\,x\right)\,\left(a\,h+b\,h\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2/((f + g*x)*(a*h + b*h*x)),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2/((f + g*x)*(a*h + b*h*x)), x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**2/(g*x+f)/(b*h*x+a*h),x)
```

```
[Out] Timed out
```

3.252 $\int \frac{A+B\log(e(a+bx)^n(c+dx)^{-n})}{(f+gx)(ah+bhx)}\,dx$

Optimal. Leaf size=123

$$\frac{Bn\text{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)}{h(bf-ag)}-\frac{\log\left(1-\frac{(c+dx)(bf-ag)}{(a+bx)(df-cg)}\right)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{h(bf-ag)}$$

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

Rubi [A] time = 0.37, antiderivative size = 163, normalized size of antiderivative = 1.33, number of steps used = 8, number of rules used = 6, integrand size = 41, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.146, Rules used = {6742, 36, 31, 2503, 2502, 2315}

$$\frac{Bn\text{PolyLog}\left(2,\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}+1\right)}{h(bf-ag)}+\frac{A\log(a+bx)}{h(bf-ag)}-\frac{A\log(f+gx)}{h(bf-ag)}-\frac{B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}\right.}{h(bf-ag)}$$

Antiderivative was successfully verified.

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

```
[Out] (A*Log[a + b*x])/((b*f - a*g)*h) - (A*Log[f + g*x])/((b*f - a*g)*h) - (B*Lo
g[(e*(a + b*x)^n)/(c + d*x)^n]*Log[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(
a + b*x)))])/((b*f - a*g)*h) + (B*n*PolyLog[2, 1 + ((b*c - a*d)*(f + g*x))/
((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Coeff[Simplify[1/(u*(a + b*x))],
 x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b
*x)^p*(c + d*x)^q)^r]^s*Log[-(((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
```

```
)))])/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1)*Log[-(((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x)))])/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0]] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
 x]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(f+gx)(ah+bhx)}\,dx = \int \left(\frac{A}{h(a+bx)(f+gx)}+\frac{B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{h(a+bx)(f+gx)}\right)dx$$

$$= \frac{A\int \frac{1}{(a+bx)(f+gx)}\,dx}{h}+\frac{B\int \frac{\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(a+bx)(f+gx)}\,dx}{h}$$

$$= -\frac{B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf-ag)h}+\frac{(Ab)\int \frac{1}{a+bx}\,dx}{(bf-ag)h}$$

$$= \frac{A\log(a+bx)}{(bf-ag)h}-\frac{A\log(f+gx)}{(bf-ag)h}-\frac{B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(\right.}{(bf-ag)h}$$

$$= \frac{A\log(a+bx)}{(bf-ag)h}-\frac{A\log(f+gx)}{(bf-ag)h}-\frac{B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(\right.}{(bf-ag)h}$$

Mathematica [B] time = 0.31, size = 304, normalized size = 2.47

$$-\frac{-2A\log(a+bx)+2B\log(f+gx)\log\left(e(a+bx)^n(c+dx)^{-n}\right)-2B\log(a+bx)\log\left(e(a+bx)^n(c+dx)^{-n}\right)+2}{}$$

Antiderivative was successfully verified.

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

```
[Out] -1/2*(-2*A*Log[a + b*x] + B*n*Log[a + b*x]^2 - 2*B*n*Log[a + b*x]*Log[c + d
*x] + 2*B*n*Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c + d*x] - 2*B*Log[a + b*
x]*Log[(e*(a + b*x)^n)/(c + d*x)^n] + 2*A*Log[f + g*x] - 2*B*n*Log[a + b*x]
*Log[f + g*x] + 2*B*n*Log[c + d*x]*Log[f + g*x] + 2*B*Log[(e*(a + b*x)^n)/(
c + d*x)^n]*Log[f + g*x] + 2*B*n*Log[a + b*x]*Log[(b*(f + g*x))/(b*f - a*g)
] - 2*B*n*Log[c + d*x]*Log[(d*(f + g*x))/(d*f - c*g)] + 2*B*n*PolyLog[2, (g
*(a + b*x))/(-(b*f) + a*g)] + 2*B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] -
 2*B*n*PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)])/((b*f - a*g)*h)
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A}{bghx^2+afh+\left(bf+ag\right)hx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(g*x+f)/(b*h*x+a*h),x, algorit
hm="fricas")
```

```
[Out] integral((B*log((b*x + a)^n*e/(d*x + c)^n) + A)/(b*g*h*x^2 + a*f*h + (b*f +
 a*g)*h*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A}{(bhx+ah)(gx+f)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(g*x+f)/(b*h*x+a*h),x, algorit
hm="giac")
```

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

maple [C] time = 0.36, size = 1447, normalized size = 11.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn
(I*(b*x+a)^n/((d*x+c)^n))-1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n
/((d*x+c)^n))^3+1/h*A/(a*g-b*f)*ln(g*x+f)-1/h*A/(a*g-b*f)*ln(b*x+a)+1/2*I/h
/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2
+1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)
^2-1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*
x+c)^n))^2+1/h*B*n/(a*g-b*f)*ln(g*x+f)*ln(((g*x+f)*d+c*g-d*f)/(c*g-d*f))-1/
h*B*n/(a*g-b*f)*ln(b*x+a)*ln((-a*d+b*c+(b*x+a)*d)/(-a*d+b*c))-1/h*B*n/(a*g-
b*f)*ln(g*x+f)*ln((b*(g*x+f)+a*g-b*f)/(a*g-b*f))-1/2*I/h/(a*g-b*f)*ln(g*x+f
)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))+
1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x
+c)^n))^2-1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(
b*x+a)^n)^2-1/h*B*ln((b*x+a)^n)/(a*g-b*f)*ln(b*x+a)-1/h*B*ln((d*x+c)^n)/(a*
g-b*f)*ln(g*x+f)-1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)
^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csg
n(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)-1/2*I/
h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n)
)^2+1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e
/((d*x+c)^n)*(b*x+a)^n)^2+1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*e)*csgn(I
*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)+1/2*I/h/(a*g-b*f)*l
n(b*x+a)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))^3-1/2*I/h/(a*g-b*f)*ln(g*x+f)*B
*Pi*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3+1/h*B*ln((d*x+c)^n)/(a*g-b*f)*ln(b*x+
a)+1/h*B/(a*g-b*f)*ln(g*x+f)*ln((b*x+a)^n)+1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi
*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3+1/h*B*n/(a*g-b*f)*dilog(((g*x+f)*d+c*g-d
*f)/(c*g-d*f))-1/h*B*n/(a*g-b*f)*dilog((b*(g*x+f)+a*g-b*f)/(a*g-b*f))+1/2/h
*B*n/(a*g-b*f)*ln(b*x+a)^2-1/h*B*n/(a*g-b*f)*dilog((-a*d+b*c+(b*x+a)*d)/(-a
*d+b*c))+1/h/(a*g-b*f)*ln(g*x+f)*B*ln(e)-1/h/(a*g-b*f)*ln(b*x+a)*B*ln(e)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A\left(\frac{\log(bx+a)}{(bf-ag)h}-\frac{\log(gx+f)}{(bf-ag)h}\right)-B\int -\frac{\log\left((bx+a)^n\right)-\log\left((dx+c)^n\right)+\log(e)}{bghx^2+afh+(bfh+agh)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(g*x+f)/(b*h*x+a*h),x, algorit
hm="maxima")
```

```
[Out] A*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) - B*integra
te(-(log((b*x + a)^n) - log((d*x + c)^n) + log(e))/(b*g*h*x^2 + a*f*h + (b*
f*h + a*g*h)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)}{\left(f+g\,x\right)\,\left(a\,h+b\,h\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/((f + g*x)*(a*h + b*h*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.253 $\int \frac{1}{(f+gx)(ah+bhx)\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)}\,dx$

Optimal. Leaf size=82

$$\text{Subst}\left(\text{Int}\left(\frac{1}{(f+gx)(ah+bhx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)},x\right),e\left(\frac{a+bx}{c+dx}\right)^n,e(a+bx)^n(c+dx)^{-n}\right)$$

```
[Out] _eval(Unintegrable(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*((b*x+a)/(d*x+c))^n)),x)
,e*((b*x+a)/(d*x+c))^n = e*(b*x+a)^n/((d*x+c)^n))
```

Rubi [A] time = 0.43, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)(ah+bhx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] (b*Defer[Int][1/((a + b*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])), x])/(
(b*f - a*g)*h) - (g*Defer[Int][1/((f + g*x)*(A + B*Log[(e*(a + b*x)^n)/(c +
 d*x)^n])), x])/((b*f - a*g)*h)
```

Rubi steps

$$\int \frac{1}{(f+gx)(ah+bhx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\,dx = \int \left(\frac{b}{(bf-ag)h(a+bx)\left(A+B\log\left(e(a+bx)^n(c+\right.\right.}\right.$$

$$= \frac{b\int \frac{1}{(a+bx)\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)}\,dx}{(bf-ag)h} - \frac{g\int \frac{}{(f+gx)(A}}{}$$

Mathematica [A] time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(ah+bhx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[1/((f + g*x)*(a*h + b*h*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n
])), x]
```

fricas [A] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{Abghx^2+Aafh+\left(Abf+Aag\right)hx+\left(Bbghx^2+Bafh+\left(Bbf+Bag\right)hx\right)\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algor
ithm="fricas")
```

```
[Out] integral(1/(A*b*g*h*x^2 + A*a*f*h + (A*b*f + A*a*g)*h*x + (B*b*g*h*x^2 + B*
a*f*h + (B*b*f + B*a*g)*h*x)*log((b*x + a)^n*e/(d*x + c)^n)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(bhx+ah)\left(gx+f\right)\left(B\log\left(\frac{(bx+a)^{n}e}{(dx+c)^{n}}\right)+A\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algor
ithm="giac")
```

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

maple [A] time = 7.59, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx+f\right)\left(bhx+ah\right)\left(B\ln\left(e\left(bx+a\right)^{n}\left(dx+c\right)^{-n}\right)+A\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(bhx+ah)\left(gx+f\right)\left(B\log\left(\frac{(bx+a)^{n}e}{(dx+c)^{n}}\right)+A\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n))),x, algor
ithm="maxima")
```

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

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(f+g\,x\right)\,\left(a\,h+b\,h\,x\right)\,\left(A+B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(1/((f + g*x)*(a*h + b*h*x)*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))), x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.254 $\int \frac{1}{(f+gx)(ah+bhx)\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^2} dx$

Optimal. Leaf size=82

$$\text{Subst}\left(\text{Int}\left(\frac{1}{(f+gx)(ah+bhx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2},x\right),e\left(\frac{a+bx}{c+dx}\right)^n,e(a+bx)^n(c+dx)^{-n}\right)$$

```
[Out] _eval(Unintegrable(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2,
x),e*((b*x+a)/(d*x+c))^n = e*(b*x+a)^n/((d*x+c)^n))
```

Rubi [A] time = 0.48, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(f+gx)(ah+bhx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((f + g*x)*(a*h + b*h*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2),
x]
```

```
[Out] (b*Defer[Int][1/((a + b*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2), x])
/((b*f - a*g)*h) - (g*Defer[Int][1/((f + g*x)*(A + B*Log[(e*(a + b*x)^n)/(c
 + d*x)^n])^2), x])/((b*f - a*g)*h)
```

Rubi steps

$$\int \frac{1}{(f+gx)(ah+bhx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2} dx = \int \left(\frac{b}{(bf-ag)h(a+bx)\left(A+B\log\left(e(a+bx)^n(c-\right.\right.}\right.$$

$$= \frac{b\int \frac{1}{(a+bx)\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^2} dx}{(bf-ag)h} - \frac{g\int \frac{}{(f+gx)(}}{}$$

Mathematica [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{1}{(f+gx)(ah+bhx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((f + g*x)*(a*h + b*h*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n
])^2),x]
```

```
[Out] Integrate[1/((f + g*x)*(a*h + b*h*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n
])^2), x]
```

fricas [A] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{A^2bghx^2+A^2afh+\left(A^2bf+A^2ag\right)hx+\left(B^2bghx^2+B^2afh+\left(B^2bf+B^2ag\right)hx\right)\log\left(\frac{(bx+a)^ne}{(dx+c)^n}\right)^2+2\left(\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, alg
orithm="fricas")
```

```
[Out] integral(1/(A^2*b*g*h*x^2 + A^2*a*f*h + (A^2*b*f + A^2*a*g)*h*x + (B^2*b*g*
h*x^2 + B^2*a*f*h + (B^2*b*f + B^2*a*g)*h*x)*log((b*x + a)^n*e/(d*x + c)^n)
^2 + 2*(A*B*b*g*h*x^2 + A*B*a*f*h + (A*B*b*f + A*B*a*g)*h*x)*log((b*x + a)^
n*e/(d*x + c)^n)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(bhx + ah)\left(gx + f\right)\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, alg
orithm="giac")
```

```
[Out] integrate(1/((b*h*x + a*h)*(g*x + f)*(B*log((b*x + a)^n*e/(d*x + c)^n) + A)
^2), x)
```

maple [A] time = 8.96, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(gx + f\right)(bhx + ah)\left(B\ln\left(e\,(bx + a)^n\,(dx + c)^{-n}\right) + A\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2,x)
```

```
[Out] int(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\left(df - cg\right)\int \frac{}{\left(bcf^2hn - adf^2hn\right)AB + \left(bcf^2hn\log(e) - adf^2hn\log(e)\right)B^2 + \left(\left(bcg^2hn - adg^2hn\right)AB + \left(bcg^2hn\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2,x, alg
orithm="maxima")
```

```
[Out] (d*f - c*g)*integrate(1/((b*c*f^2*h*n - a*d*f^2*h*n)*A*B + (b*c*f^2*h*n*log
(e) - a*d*f^2*h*n*log(e))*B^2 + ((b*c*g^2*h*n - a*d*g^2*h*n)*A*B + (b*c*g^2
*h*n*log(e) - a*d*g^2*h*n*log(e))*B^2)*x^2 + 2*((b*c*f*g*h*n - a*d*f*g*h*n)
*A*B + (b*c*f*g*h*n*log(e) - a*d*f*g*h*n*log(e))*B^2)*x + ((b*c*g^2*h*n - a
*d*g^2*h*n)*B^2*x^2 + 2*(b*c*f*g*h*n - a*d*f*g*h*n)*B^2*x + (b*c*f^2*h*n -
a*d*f^2*h*n)*B^2)*log((b*x + a)^n) - ((b*c*g^2*h*n - a*d*g^2*h*n)*B^2*x^2 +
 2*(b*c*f*g*h*n - a*d*f*g*h*n)*B^2*x + (b*c*f^2*h*n - a*d*f^2*h*n)*B^2)*log
((d*x + c)^n)), x) - (d*x + c)/((b*c*f*h*n - a*d*f*h*n)*A*B + (b*c*f*h*n*lo
g(e) - a*d*f*h*n*log(e))*B^2 + ((b*c*g*h*n - a*d*g*h*n)*A*B + (b*c*g*h*n*lo
g(e) - a*d*g*h*n*log(e))*B^2)*x + ((b*c*g*h*n - a*d*g*h*n)*B^2*x + (b*c*f*h
*n - a*d*f*h*n)*B^2)*log((b*x + a)^n) - ((b*c*g*h*n - a*d*g*h*n)*B^2*x + (b
*c*f*h*n - a*d*f*h*n)*B^2)*log((d*x + c)^n))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(f + g\,x\right)\,\left(a\,h + b\,h\,x\right)\,{\left(A + B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((f + g*x)*(a*h + b*h*x)*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2),
x)
```

```
[Out] int(1/((f + g*x)*(a*h + b*h*x)*(A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2),
 x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(g*x+f)/(b*h*x+a*h)/(A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**2,x)
```

```
[Out] Timed out
```

3.255 $\int \frac{\log\left(\frac{c+dx}{a+bx}\right)}{(a+bx)((a-c)h+(b-d)hx)}\,dx$

Optimal. Leaf size=33

$$-\frac{\operatorname{Li}_2\left(1-\frac{c+dx}{a+bx}\right)}{h(bc-ad)}$$

```
[Out] -polylog(2,1+(-d*x-c)/(b*x+a))/(-a*d+b*c)/h
```

Rubi [A] time = 0.10, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {2502, 2315}

$$-\frac{\operatorname{PolyLog}\left(2,1-\frac{c+dx}{a+bx}\right)}{h(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(c + d*x)/(a + b*x)]/((a + b*x)*((a - c)*h + (b - d)*h*x)),x]
```

```
[Out] -(PolyLog[2, 1 - (c + d*x)/(a + b*x)]/((b*c - a*d)*h))
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\log\left(\frac{c+dx}{a+bx}\right)}{(a+bx)((a-c)h+(b-d)hx)}\,dx &= -\frac{\operatorname{Subst}\left(\int \frac{\log(x)}{1-x}\,dx, x, \frac{c+dx}{a+bx}\right)}{(bc-ad)h}\\
&= -\frac{\operatorname{Li}_2\left(1-\frac{c+dx}{a+bx}\right)}{(bc-ad)h}
\end{aligned}$$

Mathematica [B] time = 0.19, size = 298, normalized size = 9.03

$$\frac{2\operatorname{Li}_2\left(\frac{d(a+bx)}{ad-bc}\right)+2\operatorname{Li}_2\left(-\frac{b(a-c+bx-dx)}{bc-ad}\right)-2\operatorname{Li}_2\left(-\frac{d(-a+c-bx+dx)}{ad-bc}\right)-\log^2\left(\frac{ad-bc}{d(a+bx)}\right)-2\log\left(\frac{b(c+dx)}{bc-ad}\right)\log\left(\frac{ad-bc}{d(a+bx)}\right)+2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(c + d*x)/(a + b*x)]/((a + b*x)*((a - c)*h + (b - d)*h*x)),x]
```

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

```
+ d*x))/(b*c - a*d)] - 2*Log[a - c + b*x - d*x]*Log[((b - d)*(c + d*x))/(b*
c - a*d)] + 2*Log[(-(b*c) + a*d)/(d*(a + b*x))]*Log[(c + d*x)/(a + b*x)] +
2*Log[a - c + b*x - d*x]*Log[(c + d*x)/(a + b*x)] + 2*PolyLog[2, (d*(a + b*
x))/(-(b*c) + a*d)] + 2*PolyLog[2, -((b*(a - c + b*x - d*x))/(b*c - a*d))]
- 2*PolyLog[2, -((d*(-a + c - b*x + d*x))/(-(b*c) + a*d))])/((2*b*c - 2*a*d
)*h)
```

fricas [A] time = 0.91, size = 32, normalized size = 0.97

$$-\frac{\mathrm{Li}_2\left(-\frac{dx+c}{bx+a}+1\right)}{(bc-ad)h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((d*x+c)/(b*x+a))/(b*x+a)/((a-c)*h+(b-d)*h*x),x, algorithm="fr
icas")
```

```
[Out] -dilog(-(d*x + c)/(b*x + a) + 1)/((b*c - a*d)*h)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((d*x+c)/(b*x+a))/(b*x+a)/((a-c)*h+(b-d)*h*x),x, algorithm="gi
ac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 42, normalized size = 1.27

$$\frac{\mathrm{dilog}\left(\frac{d}{b}-\frac{ad-bc}{(bx+a)b}\right)}{(ad-bc)\,h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((d*x+c)/(b*x+a))/(b*x+a)/((a-c)*h+(b-d)*h*x),x)
```

```
[Out] dilog(-(a*d-b*c)/b/(b*x+a)+d/b)/h/(a*d-b*c)
```

maxima [B] time = 0.85, size = 357, normalized size = 10.82

$$\left(\frac{\log\left(-(b-d)x-a+c\right)}{(bc-ad)h}-\frac{\log\left(bx+a\right)}{(bc-ad)h}\right)\log\left(\frac{dx+c}{bx+a}\right)+\frac{2\,\log\left(-(b-d)x-a+c\right)\log\left(bx+a\right)-\log\left(bx+a\right)^2}{2\,(bch-adh)}+\frac{\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((d*x+c)/(b*x+a))/(b*x+a)/((a-c)*h+(b-d)*h*x),x, algorithm="ma
xima")
```

```
[Out] (log(-(b - d)*x - a + c)/((b*c - a*d)*h) - log(b*x + a)/((b*c - a*d)*h))*lo
g((d*x + c)/(b*x + a)) + 1/2*(2*log(-(b - d)*x - a + c)*log(b*x + a) - log(
b*x + a)^2)/(b*c*h - a*d*h) + (log(b*x + a)*log((b*d*x + a*d)/(b*c - a*d) +
 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))/(b*c*h - a*d*h) - (log(b*x + a)*lo
g(-(a*(b - d) + (b^2 - b*d)*x)/(b*c - a*d) + 1) + dilog((a*(b - d) + (b^2 -
 b*d)*x)/(b*c - a*d)))/(b*c*h - a*d*h) - (log(-(b - d)*x - a + c)*log((a*d
- c*d + (b*d - d^2)*x)/(b*c - a*d) + 1) + dilog(-(a*d - c*d + (b*d - d^2)*x
)/(b*c - a*d)))/(b*c*h - a*d*h)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\ln\left(\frac{c+d\,x}{a+b\,x}\right)}{\left(h\,\left(a-c\right)+h\,x\,\left(b-d\right)\right)\,\left(a+b\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((c + d*x)/(a + b*x))/((h*(a - c) + h*x*(b - d))*(a + b*x)),x)
[Out] int(log((c + d*x)/(a + b*x))/((h*(a - c) + h*x*(b - d))*(a + b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((d*x+c)/(b*x+a))/(b*x+a)/((a-c)*h+(b-d)*h*x),x)
[Out] Timed out
```

3.256 $\int \frac{\log\left(\frac{a-cg+(b-dg)x}{a+bx}\right)}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=27

$$\frac{\mathrm{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc-ad}$$

```
[Out] polylog(2,g*(d*x+c)/(b*x+a))/(-a*d+b*c)
```

Rubi [A] time = 0.07, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {2502, 2315}

$$\frac{\mathrm{PolyLog}\left(2,\frac{g(c+dx)}{a+bx}\right)}{bc-ad}$$

Antiderivative was successfully verified.

```
[In] Int[Log[(a - c*g + (b - d*g)*x)/(a + b*x)]/((a + b*x)*(c + d*x)),x]
```

```
[Out] PolyLog[2, (g*(c + d*x))/(a + b*x)]/(b*c - a*d)
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rubi steps

$$\begin{aligned}\int \frac{\log\left(\frac{a-cg+(b-dg)x}{a+bx}\right)}{(a+bx)(c+dx)}\,dx &= -\frac{g\,\mathrm{Subst}\left(\int \frac{\log(x)}{1-x}\,dx, x, \frac{a-cg+(b-dg)x}{a+bx}\right)}{b(a-cg)-a(b-dg)}\\ &= \frac{\mathrm{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc-ad}\end{aligned}$$

Mathematica [B] time = 0.26, size = 320, normalized size = 11.85

$$-2\mathrm{Li}_2\left(\frac{(b-dg)(a+bx)}{(bc-ad)g}\right)+2\mathrm{Li}_2\left(\frac{(b-dg)(c+dx)}{bc-ad}\right)+\log^2\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right)+2\log\left(-\frac{b(a+bx-cg-dgx)}{g(bc-ad)}\right)\log\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right)-2\log\left(\frac{a-}{-}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(a - c*g + (b - d*g)*x)/(a + b*x)]/((a + b*x)*(c + d*x)),x]
```

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

```
*c - a*d))] + 2*Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]*Log[-((b*(a - c*
g + b*x - d*g*x))/((b*c - a*d)*g))] - 2*Log[((b*c - a*d)*g)/((b - d*g)*(a +
 b*x))]*Log[(a - c*g + b*x - d*g*x)/(a + b*x)] - 2*Log[c + d*x]*Log[(a - c*
g + b*x - d*g*x)/(a + b*x)] - 2*PolyLog[2, ((b - d*g)*(a + b*x))/((b*c - a*
d)*g)] - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 2*PolyLog[2, ((b - d*g)*
(c + d*x))/(b*c - a*d)])/(2*b*c - 2*a*d)
```

fricas [A] time = 1.03, size = 38, normalized size = 1.41

$$\frac{\mathrm{Li}_2\left(\frac{cg+\left(dg-b\right)x-a}{bx+a}+1\right)}{bc-ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a-c*g+(-d*g+b)*x)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="fri
cas")
```

```
[Out] dilog((c*g + (d*g - b)*x - a)/(b*x + a) + 1)/(b*c - a*d)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a-c*g+(-d*g+b)*x)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="gia
c")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 45, normalized size = 1.67

$$-\frac{\mathrm{dilog}\left(\frac{(ad-bc)g}{(bx+a)b}+\frac{-dg+b}{b}\right)}{ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((a-c*g+(-d*g+b)*x)/(b*x+a))/(b*x+a)/(d*x+c),x)
```

```
[Out] -dilog((-d*g+b)/b+g*(a*d-b*c)/b/(b*x+a))/(a*d-b*c)
```

maxima [B] time = 0.76, size = 344, normalized size = 12.74

$$\left(\frac{\log\left(bx+a\right)}{bc-ad}-\frac{\log\left(dx+c\right)}{bc-ad}\right)\log\left(-\frac{cg+\left(dg-b\right)x-a}{bx+a}\right)+\frac{\log\left(bx+a\right)^2-2\,\log\left(bx+a\right)\log\left(dx+c\right)}{2\left(bc-ad\right)}-\frac{\log(bx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((a-c*g+(-d*g+b)*x)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="max
ima")
```

```
[Out] (log(b*x + a)/(b*c - a*d) - log(d*x + c)/(b*c - a*d))*log(-(c*g + (d*g - b)
*x - a)/(b*x + a)) + 1/2*(log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c))/(b*
c - a*d) - (log(b*x + a)*log(((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g
) + 1) + dilog(-((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g)))/(b*c - a*
d) + (log(d*x + c)*log((c*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d) + 1) + d
ilog(-(c*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d)))/(b*c - a*d) + (log(b*x
+ a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d))
)/(b*c - a*d)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(\frac{a-c\,g+x\,\left(b-d\,g\right)}{a+b\,x}\right)}{\left(a+b\,x\right)\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((a - c*g + x*(b - d*g))/(a + b*x))/((a + b*x)*(c + d*x)),x)
[Out] int(log((a - c*g + x*(b - d*g))/(a + b*x))/((a + b*x)*(c + d*x)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((a-c*g+(-d*g+b)*x)/(b*x+a))/(b*x+a)/(d*x+c),x)
[Out] Timed out
```

3.257 $\int \frac{\log\left(1-\frac{g(c+dx)}{a+bx}\right)}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc-ad}$$

```
[Out] polylog(2,g*(d*x+c)/(b*x+a))/(-a*d+b*c)
```

Rubi [A] time = 0.12, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {2517, 2502, 2315}

$$\frac{\text{PolyLog}\left(2,\frac{g(c+dx)}{a+bx}\right)}{bc-ad}$$

Antiderivative was successfully verified.

```
[In] Int[Log[1 - (g*(c + d*x))/(a + b*x)]/((a + b*x)*(c + d*x)),x]
```

```
[Out] PolyLog[2, (g*(c + d*x))/(a + b*x)]/(b*c - a*d)
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2517

```
Int[Log[(e_.)*((f_.)*((g_) + (v_.)/(w_)))^(r_.)]^(s_.)*(u_.), x_Symbol] :>
Int[u*Log[e*((f*ExpandToSum[v + g*w, x])/ExpandToSum[w, x])^r]^s, x] /; Fre
eQ[{e, f, g, r, s}, x] && LinearQ[w, x] && (FreeQ[v, x] || LinearQ[v, x]) &
& AlgebraicFunctionQ[u, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\log\left(1-\frac{g(c+dx)}{a+bx}\right)}{(a+bx)(c+dx)}\,dx &= \int \frac{\log\left(\frac{a-cg+(b-dg)x}{a+bx}\right)}{(a+bx)(c+dx)}\,dx\\
&= -\frac{g\,\text{Subst}\left(\int \frac{\log(x)}{1-x}\,dx, x, \frac{a-cg+(b-dg)x}{a+bx}\right)}{b(a-cg)-a(b-dg)}\\
&= \frac{\text{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc-ad}
\end{aligned}$$

Mathematica [B] time = 0.19, size = 320, normalized size = 11.85

$$-2\text{Li}_2\left(\frac{(b-dg)(a+bx)}{(bc-ad)g}\right)+2\text{Li}_2\left(\frac{(b-dg)(c+dx)}{bc-ad}\right)+\log^2\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right)+2\log\left(-\frac{b(a+bx-cg-dgx)}{g(bc-ad)}\right)\log\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right)-2\log\left(\frac{a-}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[1 - (g*(c + d*x))/(a + b*x)]/((a + b*x)*(c + d*x)),x]
```

```
[Out] (Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]^2 - 2*Log[(d*(a + b*x))/(-(b*c)
 + a*d)]*Log[c + d*x] + 2*Log[c + d*x]*Log[-((d*(a - c*g + b*x - d*g*x))/(b
*c - a*d))] + 2*Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]*Log[-((b*(a - c*
g + b*x - d*g*x))/((b*c - a*d)*g))] - 2*Log[((b*c - a*d)*g)/((b - d*g)*(a +
 b*x))]*Log[(a - c*g + b*x - d*g*x)/(a + b*x)] - 2*Log[c + d*x]*Log[(a - c*
g + b*x - d*g*x)/(a + b*x)] - 2*PolyLog[2, ((b - d*g)*(a + b*x))/((b*c - a*
d)*g)] - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 2*PolyLog[2, ((b - d*g)*
(c + d*x))/(b*c - a*d)])/(2*b*c - 2*a*d)
```

fricas [A] time = 0.68, size = 38, normalized size = 1.41

$$\frac{\text{Li}_2\left(\frac{cg+(dg-b)x-a}{bx+a}+1\right)}{bc-ad}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] dilog((c*g + (d*g - b)*x - a)/(b*x + a) + 1)/(b*c - a*d)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

maple [A] time = 0.05, size = 45, normalized size = 1.67

$$-\frac{\text{dilog}\left(\frac{(ad-bc)g}{(bx+a)b}+\frac{-dg+b}{b}\right)}{ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln(1-g*(d*x+c)/(b*x+a))/(b*x+a)/(d*x+c),x)
```

```
[Out] -dilog((a*d-b*c)/(b*x+a)/b*g+(-d*g+b)/b)/(a*d-b*c)
```

maxima [B] time = 0.81, size = 336, normalized size = 12.44

$$\left(\frac{\log(bx+a)}{bc-ad}-\frac{\log(dx+c)}{bc-ad}\right)\log\left(-\frac{(dx+c)g}{bx+a}+1\right)+\frac{\log(bx+a)^2-2\log(bx+a)\log(dx+c)}{2(bc-ad)}-\frac{\log(bx+a)\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (log(b*x + a)/(b*c - a*d) - log(d*x + c)/(b*c - a*d))*log(-(d*x + c)*g/(b*x
 + a) + 1) + 1/2*(log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c))/(b*c - a*d)
```

```
 - (log(b*x + a)*log(((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g) + 1) +
 dilog(-((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g)))/(b*c - a*d) + (lo
g(d*x + c)*log((c*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d) + 1) + dilog(-(c
*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d)))/(b*c - a*d) + (log(b*x + a)*log
((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d)))/(b*c -
 a*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(1-\frac{g\,(c+d\,x)}{a+b\,x}\right)}{(a+b\,x)\,(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log(1 - (g*(c + d*x))/(a + b*x))/((a + b*x)*(c + d*x)),x)
[Out] int(log(1 - (g*(c + d*x))/(a + b*x))/((a + b*x)*(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln(1-g*(d*x+c)/(b*x+a))/(b*x+a)/(d*x+c),x)
[Out] Timed out
```

3.258 $\int \frac{\log\left(\frac{a-cg+bx-dgx}{a+bx}\right)}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=27

$$\frac{\text{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc-ad}$$

[Out] polylog(2,g*(d*x+c)/(b*x+a))/(-a*d+b*c)

Rubi [A] time = 0.12, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.079, Rules used = {2516, 2502, 2315}

$$\frac{\text{PolyLog}\left(2,\frac{g(c+dx)}{a+bx}\right)}{bc-ad}$$

Antiderivative was successfully verified.

[In] Int[Log[(a - c*g + b*x - d*g*x)/(a + b*x)]/((a + b*x)*(c + d*x)),x]

[Out] PolyLog[2, (g*(c + d*x))/(a + b*x)]/(b*c - a*d)

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2516

```
Int[Log[(e_.)*((f_.)*(v_)^(p_.)*(w_)^(q_.))^(r_.)]^(s_.)*(u_.), x_Symbol] :
> Int[u*Log[e*(f*ExpandToSum[v, x]^p*ExpandToSum[w, x]^q)^r]^s, x] /; FreeQ
[{e, f, p, q, r, s}, x] && LinearQ[{v, w}, x] &&  !LinearMatchQ[{v, w}, x]
&& AlgebraicFunctionQ[u, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\log\left(\frac{a-cg+bx-dgx}{a+bx}\right)}{(a+bx)(c+dx)}\,dx &= \int \frac{\log\left(\frac{a-cg+(b-dg)x}{a+bx}\right)}{(a+bx)(c+dx)}\,dx\\
&= -\frac{g\,\text{Subst}\left(\int \frac{\log(x)}{1-x}\,dx, x, \frac{a-cg+(b-dg)x}{a+bx}\right)}{b(a-cg)-a(b-dg)}\\
&= \frac{\text{Li}_2\left(\frac{g(c+dx)}{a+bx}\right)}{bc-ad}
\end{aligned}$$

Mathematica [B] time = 0.18, size = 320, normalized size = 11.85

$$-2\text{Li}_2\left(\frac{(b-dg)(a+bx)}{(bc-ad)g}\right)+2\text{Li}_2\left(\frac{(b-dg)(c+dx)}{bc-ad}\right)+\log^2\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right)+2\log\left(-\frac{b(a+bx-cg-dgx)}{g(bc-ad)}\right)\log\left(\frac{g(bc-ad)}{(a+bx)(b-dg)}\right)-2\log$$

Antiderivative was successfully verified.

```
[In] Integrate[Log[(a - c*g + b*x - d*g*x)/(a + b*x)]/((a + b*x)*(c + d*x)),x]
```

```
[Out] (Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]^2 - 2*Log[(d*(a + b*x))/(-(b*c)
 + a*d)]*Log[c + d*x] + 2*Log[c + d*x]*Log[-((d*(a - c*g + b*x - d*g*x))/(b
*c - a*d))] + 2*Log[((b*c - a*d)*g)/((b - d*g)*(a + b*x))]*Log[-((b*(a - c*
g + b*x - d*g*x))/((b*c - a*d)*g))] - 2*Log[((b*c - a*d)*g)/((b - d*g)*(a +
 b*x))]*Log[(a - c*g + b*x - d*g*x)/(a + b*x)] - 2*Log[c + d*x]*Log[(a - c*
g + b*x - d*g*x)/(a + b*x)] - 2*PolyLog[2, ((b - d*g)*(a + b*x))/((b*c - a*
d)*g)] - 2*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] + 2*PolyLog[2, ((b - d*g)*
(c + d*x))/(b*c - a*d)])/(2*b*c - 2*a*d)
```

fricas [A] time = 0.69, size = 38, normalized size = 1.41

$$\frac{\text{Li}_2\left(\frac{cg+(dg-b)x-a}{bx+a}+1\right)}{bc-ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d*g*x+b*x-c*g+a)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="fri
cas")
```

```
[Out] dilog((c*g + (d*g - b)*x - a)/(b*x + a) + 1)/(b*c - a*d)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d*g*x+b*x-c*g+a)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="gia
c")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 45, normalized size = 1.67

$$-\frac{\text{dilog}\left(\frac{(ad-bc)g}{(bx+a)b}+\frac{-dg+b}{b}\right)}{ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(ln((-d*g*x+b*x-c*g+a)/(b*x+a))/(b*x+a)/(d*x+c),x)
```

```
[Out] -dilog((a*d-b*c)/(b*x+a)/b*g+(-d*g+b)/b)/(a*d-b*c)
```

maxima [B] time = 0.82, size = 343, normalized size = 12.70

$$\left(\frac{\log(bx+a)}{bc-ad}-\frac{\log(dx+c)}{bc-ad}\right)\log\left(-\frac{dgx+cg-bx-a}{bx+a}\right)+\frac{\log(bx+a)^2-2\log(bx+a)\log(dx+c)}{2(bc-ad)}-\frac{\log(bx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(log((-d*g*x+b*x-c*g+a)/(b*x+a))/(b*x+a)/(d*x+c),x, algorithm="max
ima")
```

```
[Out] (log(b*x + a)/(b*c - a*d) - log(d*x + c)/(b*c - a*d))*log(-(d*g*x + c*g - b
*x - a)/(b*x + a)) + 1/2*(log(b*x + a)^2 - 2*log(b*x + a)*log(d*x + c))/(b*
c - a*d) - (log(b*x + a)*log(((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g
) + 1) + dilog(-((d*g - b)*a + (b*d*g - b^2)*x)/(b*c*g - a*d*g)))/(b*c - a*
d) + (log(d*x + c)*log((c*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d) + 1) + d
ilog(-(c*d*g - b*c + (d^2*g - b*d)*x)/(b*c - a*d)))/(b*c - a*d) + (log(b*x
+ a)*log((b*d*x + a*d)/(b*c - a*d) + 1) + dilog(-(b*d*x + a*d)/(b*c - a*d))
)/(b*c - a*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\ln\left(\frac{a-c\,g+b\,x-d\,g\,x}{a+b\,x}\right)}{(a+b\,x)\,(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(log((a - c*g + b*x - d*g*x)/(a + b*x))/((a + b*x)*(c + d*x)),x)
```

```
[Out] int(log((a - c*g + b*x - d*g*x)/(a + b*x))/((a + b*x)*(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(ln((-d*g*x+b*x-c*g+a)/(b*x+a))/(b*x+a)/(d*x+c),x)
```

```
[Out] Timed out
```

3.259 $\int \frac{\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^3}{afh+bghx^2+h(bfx+agx)}\,dx$

Optimal. Leaf size=282

$$\frac{6B^2n^2\text{Li}_3\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{h(bf-ag)}+\frac{3Bn\text{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right.}{h(bf-ag)}$$

```
[Out] -(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3*ln(1-(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*
x+a))/(-a*g+b*f)/h+3*B*n*(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2*polylog(2,(-a*
g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h+6*B^2*n^2*(A+B*ln(e*(b*x+a)
^n/((d*x+c)^n)))*polylog(3,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f
)/h+6*B^3*n^3*polylog(4,(-a*g+b*f)*(d*x+c)/(-c*g+d*f)/(b*x+a))/(-a*g+b*f)/h
```

Rubi [B] time = 1.31, antiderivative size = 656, normalized size of antiderivative = 2.33, number of steps used = 17, number of rules used = 11, integrand size = 51, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.216, Rules used = {6688, 12, 6742, 36, 31, 2503, 2502, 2315, 2506, 6610, 2508}

$$\frac{3A^2Bn\text{PolyLog}\left(2,\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}+1\right)}{h(bf-ag)}+\frac{6AB^2n\log\left(e(a+bx)^n(c+dx)^{-n}\right)\text{PolyLog}\left(2,\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}+1\right)}{h(bf-ag)}+\frac{6AB^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/(a*f*h + b*g*h*x^2 + h*(b*f*
x + a*g*x)),x]
```

```
[Out] (A^3*Log[a + b*x])/((b*f - a*g)*h) - (A^3*Log[f + g*x])/((b*f - a*g)*h) - (
3*A^2*B*Log[(e*(a + b*x)^n)/(c + d*x)^n]*Log[-(((b*c - a*d)*(f + g*x))/((d*
f - c*g)*(a + b*x)))])/((b*f - a*g)*h) - (3*A*B^2*Log[(e*(a + b*x)^n)/(c +
d*x)^n]^2*Log[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f -
a*g)*h) - (B^3*Log[(e*(a + b*x)^n)/(c + d*x)^n]^3*Log[-(((b*c - a*d)*(f + g
*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h) + (3*A^2*B*n*PolyLog[2, 1 +
 ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*A*B
^2*n*Log[(e*(a + b*x)^n)/(c + d*x)^n]*PolyLog[2, 1 + ((b*c - a*d)*(f + g*x)
)/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (3*B^3*n*Log[(e*(a + b*x)^n)/
(c + d*x)^n]^2*PolyLog[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x
))])/((b*f - a*g)*h) + (6*A*B^2*n^2*PolyLog[3, 1 + ((b*c - a*d)*(f + g*x))/
((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (6*B^3*n^2*Log[(e*(a + b*x)^n)/
(c + d*x)^n]*PolyLog[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))
])/((b*f - a*g)*h) + (6*B^3*n^3*PolyLog[4, 1 + ((b*c - a*d)*(f + g*x))/((d*
f - c*g)*(a + b*x))])/((b*f - a*g)*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Coeff[Simplify[1/(u*(a + b*x))],
 x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b
*x)^p*(c + d*x)^q)^r]^s*Log[-(((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
)))])/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1)*Log[-(((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x)))])/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0]] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
 x]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 2508

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_)*PolyLog[n_, v_], x_Symbol] :> With[{g = Simplify[(v*(c +
 d*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, Simp[(h*PolyLog[n
+ 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] - Dist[h*p*
r*s, Int[(PolyLog[n + 1, v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/(
(a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e,
f, n, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^3}{afh+bghx^2+h(bfx+agx)}\,dx=\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^3}{h(a+bx)(f+gx)}\,dx$$

$$=\frac{\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^3}{(a+bx)(f+gx)}\,dx}{h}$$

$$=\frac{\int \left(\frac{A^3}{(a+bx)(f+gx)}+\frac{3A^2B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(a+bx)(f+gx)}+\frac{3AB^2\log^2\left(e(a+bx)^n(c+dx)^{-n}\right)}{(a+bx)(f+gx)}\right.}{h}$$

$$=\frac{A^3\int \frac{1}{(a+bx)(f+gx)}\,dx}{h}+\frac{\left(3A^2B\right)\int \frac{\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(a+bx)(f+gx)}\,dx}{h}+\frac{\left(3AB^2\right)}{}$$

$$=-\frac{3A^2B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf-ag)h}-\frac{3AB^2\log}{}$$

$$=\frac{A^3\log(a+bx)}{(bf-ag)h}-\frac{A^3\log(f+gx)}{(bf-ag)h}-\frac{3A^2B\log\left(e(a+bx)^n(c+dx\right.}{(bf-ag}$$

$$=\frac{A^3\log(a+bx)}{(bf-ag)h}-\frac{A^3\log(f+gx)}{(bf-ag)h}-\frac{3A^2B\log\left(e(a+bx)^n(c+dx\right.}{(bf-ag}$$

$$=\frac{A^3\log(a+bx)}{(bf-ag)h}-\frac{A^3\log(f+gx)}{(bf-ag)h}-\frac{3A^2B\log\left(e(a+bx)^n(c+dx\right.}{(bf-ag}$$

Mathematica [F] time = 2.86, size = 0, normalized size = 0.00

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^3}{afh+bghx^2+h(bfx+agx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/(a*f*h + b*g*h*x^2 + h
*(b*f*x + a*g*x)),x]
```

```
[Out] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^3/(a*f*h + b*g*h*x^2 + h
*(b*f*x + a*g*x)), x]
```

fricas [F] time = 0.76, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{B^3\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^3+3\,AB^2\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^2+3\,A^2B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A^3}{bghx^2+afh+\left(bf+ag\right)hx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(a*f*h+b*g*h*x^2+h*(a*g*x+b*
f*x)),x, algorithm="fricas")
```

```
[Out] integral((B^3*log((b*x + a)^n*e/(d*x + c)^n)^3 + 3*A*B^2*log((b*x + a)^n*e/
(d*x + c)^n)^2 + 3*A^2*B*log((b*x + a)^n*e/(d*x + c)^n) + A^3)/(b*g*h*x^2 +
 a*f*h + (b*f + a*g)*h*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A\right)^3}{bghx^2+afh+\left(bfx+agx\right)h}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(a*f*h+b*g*h*x^2+h*(a*g*x+b*
f*x)),x, algorithm="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^3/(b*g*h*x^2 + a*f*h + (b*
f*x + a*g*x)*h), x)
```

maple [F] time = 3.68, size = 0, normalized size = 0.00

$$\int \frac{\left(B\ln\left(e\,(bx+a)^n\,(dx+c)^{-n}\right)+A\right)^3}{bgh\,x^2+afh+\left(agx+bxf\right)h}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x
)
```

```
[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^3/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x)),x
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^3\left(\frac{\log(bx+a)}{\left(bf-ag\right)h}-\frac{\log\left(gx+f\right)}{\left(bf-ag\right)h}\right)-\int -\frac{B^3\log\left((bx+a)^n\right)^3-B^3\log\left((dx+c)^n\right)^3+B^3\log(e)^3+3\,AB^2\log(e)^2+3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^3/(a*f*h+b*g*h*x^2+h*(a*g*x+b*
f*x)),x, algorithm="maxima")
```

```
[Out] A^3*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) - integra
te(-(B^3*log((b*x + a)^n)^3 - B^3*log((d*x + c)^n)^3 + B^3*log(e)^3 + 3*A*B
^2*log(e)^2 + 3*A^2*B*log(e) + 3*(B^3*log(e) + A*B^2)*log((b*x + a)^n)^2 +
3*(B^3*log((b*x + a)^n) + B^3*log(e) + A*B^2)*log((d*x + c)^n)^2 + 3*(B^3*l
og(e)^2 + 2*A*B^2*log(e) + A^2*B)*log((b*x + a)^n) - 3*(B^3*log((b*x + a)^n
)^2 + B^3*log(e)^2 + 2*A*B^2*log(e) + A^2*B + 2*(B^3*log(e) + A*B^2)*log((b
*x + a)^n))*log((d*x + c)^n))/(b*g*h*x^2 + a*f*h + (b*f*h + a*g*h)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(A+B\,\ln\left(\frac{e\,{(a+b\,x)}^n}{{(c+d\,x)}^n}\right)\right)}^3}{h\,\left(a\,g\,x+b\,f\,x\right)+a\,f\,h+b\,g\,h\,x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3/(h*(a*g*x + b*f*x) + a*f*h +
 b*g*h*x^2),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^3/(h*(a*g*x + b*f*x) + a*f*h +
 b*g*h*x^2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**3/(a*f*h+b*g*h*x**2+h*(a*g*x
+b*f*x)),x)
```

```
[Out] Timed out
```

3.260 $\int \frac{\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^2}{afh+bghx^2+h(bfx+agx)}\,dx$

Optimal. Leaf size=203

$$\frac{2Bn\text{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{h(bf-ag)}-\frac{\log\left(1-\frac{(c+dx)(bf-ag)}{(a+bx)(df-cg)}\right)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right.}{h(bf-ag)}$$

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

Rubi [A] time = 0.82, antiderivative size = 371, normalized size of antiderivative = 1.83, number of steps used = 13, number of rules used = 10, integrand size = 51, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.196, Rules used = {6688, 12, 6742, 36, 31, 2503, 2502, 2315, 2506, 6610}

$$\frac{2ABn\text{PolyLog}\left(2,\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}+1\right)}{h(bf-ag)}+\frac{2B^2n\log\left(e(a+bx)^n(c+dx)^{-n}\right)\text{PolyLog}\left(2,\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}+1\right)}{h(bf-ag)}+\frac{2B^2n^2\text{PolyL}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/(a*f*h + b*g*h*x^2 + h*(b*f*
x + a*g*x)),x]
```

```
[Out] (A^2*Log[a + b*x])/((b*f - a*g)*h) - (A^2*Log[f + g*x])/((b*f - a*g)*h) - (
2*A*B*Log[(e*(a + b*x)^n)/(c + d*x)^n]*Log[-(((b*c - a*d)*(f + g*x))/((d*f
- c*g)*(a + b*x)))])/((b*f - a*g)*h) - (B^2*Log[(e*(a + b*x)^n)/(c + d*x)^n
]^2*Log[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x)))])/((b*f - a*g)*h
) + (2*A*B*n*PolyLog[2, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))
])/((b*f - a*g)*h) + (2*B^2*n*Log[(e*(a + b*x)^n)/(c + d*x)^n]*PolyLog[2, 1
 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h) + (2*B
^2*n^2*PolyLog[3, 1 + ((b*c - a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))])/((b
*f - a*g)*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Coeff[Simplify[1/(u*(a + b*x))],
 x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b
*x)^p*(c + d*x)^q)^r]^s*Log[-(((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
)))])/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1)*Log[-(((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x)))])/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0]] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
 x]
```

Rule 2506

```
Int[Log[v_]*Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_)
)^(q_.))^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Simplify[((v - 1)*(c + d
*x))/(a + b*x)], h = Simplify[u*(a + b*x)*(c + d*x)]}, -Simp[(h*PolyLog[2,
1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^s)/(b*c - a*d), x] + Dist[h*p*r
*s, Int[(PolyLog[2, 1 - v]*Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1))/((
a + b*x)*(c + d*x)), x], x] /; FreeQ[{g, h}, x]] /; FreeQ[{a, b, c, d, e, f
, p, q, r, s}, x] && NeQ[b*c - a*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}{afh+bghx^2+h(bfx+agx)}\,dx = \int \frac{\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}{h(a+bx)(f+gx)}\,dx$$

$$= \frac{\int \frac{\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)^2}{(a+bx)(f+gx)}\,dx}{h}$$

$$= \frac{\int \left(\frac{A^2}{(a+bx)(f+gx)} + \frac{2AB\log(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(f+gx)} + \frac{B^2\log^2(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(f+gx)}\right)dx}{h}$$

$$= \frac{A^2\int \frac{1}{(a+bx)(f+gx)}\,dx}{h} + \frac{(2AB)\int \frac{\log(e(a+bx)^n(c+dx)^{-n})}{(a+bx)(f+gx)}\,dx}{h} + \frac{B^2\int \frac{\log^2(e(a+}{(a+b}}{}$$

$$= -\frac{2AB\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf-ag)h} - \frac{B^2\log^2\left(e(a\right.}{}$$

$$= \frac{A^2\log(a+bx)}{(bf-ag)h} - \frac{A^2\log(f+gx)}{(bf-ag)h} - \frac{2AB\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(bf-ag)h}$$

$$= \frac{A^2\log(a+bx)}{(bf-ag)h} - \frac{A^2\log(f+gx)}{(bf-ag)h} - \frac{2AB\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(bf-ag)h}$$

Mathematica [B] time = 0.90, size = 1415, normalized size = 6.97

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2/(a*f*h + b*g*h*x^2 + h
*(b*f*x + a*g*x)),x]
```

```
[Out] (3*Log[a + b*x]*(A + B*(-(n*Log[a + b*x]) + n*Log[c + d*x] + Log[(e*(a + b*
x)^n)/(c + d*x)^n]))^2 - 3*(A + B*(-(n*Log[a + b*x]) + n*Log[c + d*x] + Log
[(e*(a + b*x)^n)/(c + d*x)^n]))^2*Log[f + g*x] + 3*B*n*(A + B*(-(n*Log[a +
b*x]) + n*Log[c + d*x] + Log[(e*(a + b*x)^n)/(c + d*x)^n]))*(Log[a + b*x]^2
 - 2*(Log[a + b*x]*Log[(b*(f + g*x))/(b*f - a*g)] + PolyLog[2, (g*(a + b*x)
)/(-(b*f) + a*g)])) - 6*A*B*n*(Log[c + d*x]*(Log[(d*(a + b*x))/(-(b*c) + a*
d)] - Log[(d*(f + g*x))/(d*f - c*g)]) + PolyLog[2, (b*(c + d*x))/(b*c - a*d
)] - PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)]) + 6*B^2*n*(n*Log[a + b*x] -
n*Log[c + d*x] - Log[(e*(a + b*x)^n)/(c + d*x)^n])*(Log[c + d*x]*(Log[(d*(a
 + b*x))/(-(b*c) + a*d)] - Log[(d*(f + g*x))/(d*f - c*g)]) + PolyLog[2, (b*
(c + d*x))/(b*c - a*d)] - PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)]) + B^2*n
^2*(Log[a + b*x]^2*(Log[a + b*x] - 3*Log[(b*(f + g*x))/(b*f - a*g)]) - 6*Lo
g[a + b*x]*PolyLog[2, (g*(a + b*x))/(-(b*f) + a*g)] + 6*PolyLog[3, (g*(a +
b*x))/(-(b*f) + a*g)]) + 3*B^2*n^2*(Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c
 + d*x]^2 - Log[c + d*x]^2*Log[(d*(f + g*x))/(d*f - c*g)] + 2*Log[c + d*x]*
PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 2*Log[c + d*x]*PolyLog[2, (g*(c + d
*x))/(-(d*f) + c*g)] - 2*PolyLog[3, (b*(c + d*x))/(b*c - a*d)] + 2*PolyLog[
3, (g*(c + d*x))/(-(d*f) + c*g)]) - 6*B^2*n^2*((Log[a + b*x]^2*(Log[c + d*x
] - Log[(b*(c + d*x))/(b*c - a*d)]))/2 - Log[a + b*x]*Log[c + d*x]*Log[(b*(
f + g*x))/(b*f - a*g)] - (Log[(g*(c + d*x))/(-(d*f) + c*g)]*(-2*Log[a + b*x
] + Log[(g*(c + d*x))/(-(d*f) + c*g)])*(Log[(b*(f + g*x))/(b*f - a*g)] - Lo
g[(d*(f + g*x))/(d*f - c*g)]))/2 + Log[(g*(c + d*x))/(-(d*f) + c*g)]*Log[((
b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))]*(Log[(b*(f + g*x))/(b*f - a*
g)] - Log[(d*(f + g*x))/(d*f - c*g)]) - (Log[((b*f - a*g)*(c + d*x))/((d*f
- c*g)*(a + b*x))]^2*(Log[(-(b*c) + a*d)/(d*(a + b*x))] + Log[(b*(f + g*x))
```

```
/(b*f - a*g)] - Log[((-(b*c) + a*d)*(f + g*x))/((d*f - c*g)*(a + b*x))]))/2
 - Log[a + b*x]*PolyLog[2, (d*(a + b*x))/(-(b*c) + a*d)] - (Log[c + d*x] -
Log[((b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))])*PolyLog[2, (g*(a + b*
x))/(-(b*f) + a*g)] - (Log[a + b*x] + Log[((b*f - a*g)*(c + d*x))/((d*f - c
*g)*(a + b*x))])*PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)] - Log[((b*f - a*g
)*(c + d*x))/((d*f - c*g)*(a + b*x))]*(PolyLog[2, (b*(c + d*x))/(d*(a + b*x
))] - PolyLog[2, ((b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))]) + PolyLo
g[3, (d*(a + b*x))/(-(b*c) + a*d)] + PolyLog[3, (g*(a + b*x))/(-(b*f) + a*g
)] + PolyLog[3, (g*(c + d*x))/(-(d*f) + c*g)] + PolyLog[3, (b*(c + d*x))/(d
*(a + b*x))] - PolyLog[3, ((b*f - a*g)*(c + d*x))/((d*f - c*g)*(a + b*x))])
)/(3*(b*f - a*g)*h)
```

fricas [F] time = 1.00, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{B^2\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^2+2\,AB\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A^2}{bghx^2+afh+\left(bf+ag\right)hx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(a*f*h+b*g*h*x^2+h*(a*g*x+b*
f*x)),x, algorithm="fricas")
```

```
[Out] integral((B^2*log((b*x + a)^n*e/(d*x + c)^n)^2 + 2*A*B*log((b*x + a)^n*e/(d
*x + c)^n) + A^2)/(b*g*h*x^2 + a*f*h + (b*f + a*g)*h*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)+A\right)^2}{bghx^2+afh+\left(bfx+agx\right)h}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(a*f*h+b*g*h*x^2+h*(a*g*x+b*
f*x)),x, algorithm="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)^2/(b*g*h*x^2 + a*f*h + (b*
f*x + a*g*x)*h), x)
```

maple [F] time = 4.40, size = 0, normalized size = 0.00

$$\int\frac{\left(B\ln\left(e\,(bx+a)^n\,(dx+c)^{-n}\right)+A\right)^2}{bgh\,x^2+afh+\left(agx+bxf\right)h}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h),x
)
```

```
[Out] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h),x
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A^2\left(\frac{\log\left(bx+a\right)}{\left(bf-ag\right)h}-\frac{\log\left(gx+f\right)}{\left(bf-ag\right)h}\right)+\int\frac{B^2\log\left(\left(bx+a\right)^n\right)^2+B^2\log\left(\left(dx+c\right)^n\right)^2+B^2\log(e)^2+2\,AB\log(e)+2}{bghx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))^2/(a*f*h+b*g*h*x^2+h*(a*g*x+b*
f*x)),x, algorithm="maxima")
```

```
[Out] A^2*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) + integra
te((B^2*log((b*x + a)^n)^2 + B^2*log((d*x + c)^n)^2 + B^2*log(e)^2 + 2*A*B*
log(e) + 2*(B^2*log(e) + A*B)*log((b*x + a)^n) - 2*(B^2*log((b*x + a)^n) +
B^2*log(e) + A*B)*log((d*x + c)^n))/(b*g*h*x^2 + a*f*h + (b*f*h + a*g*h)*x)
, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(A+B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)\right)^2}{h\,\left(a\,g\,x+b\,f\,x\right)+a\,f\,h+b\,g\,h\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2/(h*(a*g*x + b*f*x) + a*f*h +
 b*g*h*x^2),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2/(h*(a*g*x + b*f*x) + a*f*h +
 b*g*h*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))**2/(a*f*h+b*g*h*x**2+h*(a*g*x
+b*f*x)),x)
```

```
[Out] Timed out
```

3.261 $\int \frac{A+B\log(e(a+bx)^n(c+dx)^{-n})}{afh+bghx^2+h(bfx+agx)}\,dx$

Optimal. Leaf size=123

$$\frac{Bn\text{Li}_2\left(\frac{(bf-ag)(c+dx)}{(df-cg)(a+bx)}\right)}{h(bf-ag)}-\frac{\log\left(1-\frac{(c+dx)(bf-ag)}{(a+bx)(df-cg)}\right)\left(B\log\left(e(a+bx)^n(c+dx)^{-n}\right)+A\right)}{h(bf-ag)}$$

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

Rubi [A] time = 0.39, antiderivative size = 163, normalized size of antiderivative = 1.33, number of steps used = 10, number of rules used = 8, integrand size = 49, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.163, Rules used = {6688, 12, 6742, 36, 31, 2503, 2502, 2315}

$$\frac{Bn\text{PolyLog}\left(2,\frac{(f+gx)(bc-ad)}{(a+bx)(df-cg)}+1\right)}{h(bf-ag)}+\frac{A\log(a+bx)}{h(bf-ag)}-\frac{A\log(f+gx)}{h(bf-ag)}-\frac{B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\frac{(f+gx)(bc-}{(a+bx)(df-}\right.}{h(bf-ag)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])/(a*f*h + b*g*h*x^2 + h*(b*f*x
+ a*g*x)),x]
```

```
[Out] (A*Log[a + b*x])/((b*f - a*g)*h) - (A*Log[f + g*x])/((b*f - a*g)*h) - (B*Lo
g[(e*(a + b*x)^n)/(c + d*x)^n]*Log[-(((b*c - a*d)*(f + g*x))/((d*f - c*g)*(
a + b*x)))])/((b*f - a*g)*h) + (B*n*PolyLog[2, 1 + ((b*c - a*d)*(f + g*x))/
((d*f - c*g)*(a + b*x))])/((b*f - a*g)*h)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2502

```
Int[Log[((e_.)*((c_.) + (d_.)*(x_)))/((a_.) + (b_.)*(x_))]*(u_), x_Symbol]
:> With[{g = Coeff[Simplify[1/(u*(a + b*x))], x, 0], h = Coeff[Simplify[1/(
u*(a + b*x))], x, 1]}, -Dist[(b - d*e)/(h*(b*c - a*d)), Subst[Int[Log[e*x]/
(1 - e*x), x], x, (c + d*x)/(a + b*x)], x] /; EqQ[g*(b - d*e) - h*(a - c*e)
, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b*c - a*d, 0] && LinearQ[Simplify
[1/(u*(a + b*x))], x]
```

Rule 2503

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]^(s_.)*(u_), x_Symbol] :> With[{g = Coeff[Simplify[1/(u*(a + b*x))],
 x, 0], h = Coeff[Simplify[1/(u*(a + b*x))], x, 1]}, -Simp[(Log[e*(f*(a + b
*x)^p*(c + d*x)^q)^r]^s*Log[-(((b*c - a*d)*(g + h*x))/((d*g - c*h)*(a + b*x
)))])/(b*g - a*h), x] + Dist[(p*r*s*(b*c - a*d))/(b*g - a*h), Int[(Log[e*(f
*(a + b*x)^p*(c + d*x)^q)^r]^(s - 1)*Log[-(((b*c - a*d)*(g + h*x))/((d*g -
c*h)*(a + b*x)))])/((a + b*x)*(c + d*x)), x], x] /; NeQ[b*g - a*h, 0] && Ne
Q[d*g - c*h, 0]] /; FreeQ[{a, b, c, d, e, f, p, q, r, s}, x] && NeQ[b*c - a
*d, 0] && IGtQ[s, 0] && EqQ[p + q, 0] && LinearQ[Simplify[1/(u*(a + b*x))],
 x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{afh+bghx^2+h(bfx+agx)}\,dx=\int \frac{A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{h(a+bx)(f+gx)}\,dx$$

$$=\frac{\int \frac{A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(a+bx)(f+gx)}\,dx}{h}$$

$$=\frac{\int \left(\frac{A}{(a+bx)(f+gx)}+\frac{B\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(a+bx)(f+gx)}\right)dx}{h}$$

$$=\frac{A\int \frac{1}{(a+bx)(f+gx)}\,dx}{h}+\frac{B\int \frac{\log\left(e(a+bx)^n(c+dx)^{-n}\right)}{(a+bx)(f+gx)}\,dx}{h}$$

$$=-\frac{B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\frac{(bc-ad)(f+gx)}{(df-cg)(a+bx)}\right)}{(bf-ag)h}+\frac{(Ab)\int \frac{1}{a+bx}\,dx}{(bf-ag)h}-\ldots$$

$$=\frac{A\log(a+bx)}{(bf-ag)h}-\frac{A\log(f+gx)}{(bf-ag)h}-\frac{B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\ldots\right)}{(bf-ag)h}\ldots$$

$$=\frac{A\log(a+bx)}{(bf-ag)h}-\frac{A\log(f+gx)}{(bf-ag)h}-\frac{B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\log\left(-\ldots\right)}{(bf-ag)h}\ldots$$

Mathematica [B] time = 0.27, size = 303, normalized size = 2.46

$$-\frac{-2A\log(a+bx)+2B\log(f+gx)\log\left(e(a+bx)^n(c+dx)^{-n}\right)-2B\log(a+bx)\log\left(e(a+bx)^n(c+dx)^{-n}\right)+2Bn\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])/(a*f*h + b*g*h*x^2 + h*(
b*f*x + a*g*x)),x]
```

```
[Out] -((-2*A*Log[a + b*x] + B*n*Log[a + b*x]^2 - 2*B*n*Log[a + b*x]*Log[c + d*x]
 + 2*B*n*Log[(d*(a + b*x))/(-(b*c) + a*d)]*Log[c + d*x] - 2*B*Log[a + b*x]*
Log[(e*(a + b*x)^n)/(c + d*x)^n] + 2*A*Log[f + g*x] - 2*B*n*Log[a + b*x]*Lo
g[f + g*x] + 2*B*n*Log[c + d*x]*Log[f + g*x] + 2*B*Log[(e*(a + b*x)^n)/(c +
 d*x)^n]*Log[f + g*x] + 2*B*n*Log[a + b*x]*Log[(b*(f + g*x))/(b*f - a*g)] -
 2*B*n*Log[c + d*x]*Log[(d*(f + g*x))/(d*f - c*g)] + 2*B*n*PolyLog[2, (g*(a
 + b*x))/(-(b*f) + a*g)] + 2*B*n*PolyLog[2, (b*(c + d*x))/(b*c - a*d)] - 2*
B*n*PolyLog[2, (g*(c + d*x))/(-(d*f) + c*g)])/((2*b*f - 2*a*g)*h))
```

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{B\log\left(\frac{(bx+a)^{n}e}{(dx+c)^{n}}\right)+A}{bghx^{2}+afh+\left(bf+ag\right)hx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*
x)),x, algorithm="fricas")
```

```
[Out] integral((B*log((b*x + a)^n*e/(d*x + c)^n) + A)/(b*g*h*x^2 + a*f*h + (b*f +
 a*g)*h*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{B\log\left(\frac{(bx+a)^{n}e}{(dx+c)^{n}}\right)+A}{bghx^{2}+afh+\left(bfx+agx\right)h}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*
x)),x, algorithm="giac")
```

```
[Out] integrate((B*log((b*x + a)^n*e/(d*x + c)^n) + A)/(b*g*h*x^2 + a*f*h + (b*f*
x + a*g*x)*h), x)
```

maple [C] time = 0.34, size = 1447, normalized size = 11.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h),x)
```

```
[Out] 1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn
(I*(b*x+a)^n/((d*x+c)^n))-1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n
/((d*x+c)^n))^3+1/(a*g-b*f)*A/h*ln(g*x+f)-1/(a*g-b*f)*A/h*ln(b*x+a)+1/2*I/h
/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*x+c)^n))^2
+1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)
^2-1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I*(b*x+a)^n/((d*
x+c)^n))^2+1/(a*g-b*f)*B/h*n*ln((c*g-d*f+(g*x+f)*d)/(c*g-d*f))*ln(g*x+f)-1/
(a*g-b*f)*B/h*n*ln((-a*d+b*c+(b*x+a)*d)/(-a*d+b*c))*ln(b*x+a)-1/(a*g-b*f)*B
/h*n*ln((a*g-b*f+(g*x+f)*b)/(a*g-b*f))*ln(g*x+f)-1/2*I/h/(a*g-b*f)*ln(g*x+f
)*B*Pi*csgn(I*(b*x+a)^n)*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n))+
1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x
+c)^n))^2-1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*e)*csgn(I*e/((d*x+c)^n)*(
b*x+a)^n)^2-1/(a*g-b*f)*B/h*ln((b*x+a)^n)*ln(b*x+a)-1/(a*g-b*f)*B/h*ln((d*x
+c)^n)*ln(g*x+f)-1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)
^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^2-1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csg
n(I*e)*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)-1/2*I/
```

```
h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I/((d*x+c)^n))*csgn(I*(b*x+a)^n/((d*x+c)^n)
)^2+1/2*I/h/(a*g-b*f)*ln(g*x+f)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))*csgn(I*e
/((d*x+c)^n)*(b*x+a)^n)^2+1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi*csgn(I*e)*csgn(I
*(b*x+a)^n/((d*x+c)^n))*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)+1/2*I/h/(a*g-b*f)*l
n(b*x+a)*B*Pi*csgn(I*(b*x+a)^n/((d*x+c)^n))^3-1/2*I/h/(a*g-b*f)*ln(g*x+f)*B
*Pi*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3+1/(a*g-b*f)*B/h*ln((d*x+c)^n)*ln(b*x+
a)+1/(a*g-b*f)*B/h*ln((b*x+a)^n)*ln(g*x+f)+1/2*I/h/(a*g-b*f)*ln(b*x+a)*B*Pi
*csgn(I*e/((d*x+c)^n)*(b*x+a)^n)^3+1/h*B*n/(a*g-b*f)*dilog((c*g-d*f+(g*x+f)
*d)/(c*g-d*f))-1/h*B*n/(a*g-b*f)*dilog((a*g-b*f+(g*x+f)*b)/(a*g-b*f))+1/2/(
a*g-b*f)*B/h*n*ln(b*x+a)^2-1/h*B*n/(a*g-b*f)*dilog((-a*d+b*c+(b*x+a)*d)/(-a
*d+b*c))+1/(a*g-b*f)*B/h*ln(e)*ln(g*x+f)-1/(a*g-b*f)*B/h*ln(e)*ln(b*x+a)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A\left(\frac{\log\left(bx+a\right)}{\left(bf-ag\right)h}-\frac{\log\left(gx+f\right)}{\left(bf-ag\right)h}\right)-B\int-\frac{\log\left(\left(bx+a\right)^{n}\right)-\log\left(\left(dx+c\right)^{n}\right)+\log(e)}{bghx^{2}+afh+\left(bfh+agh\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*log(e*(b*x+a)^n/((d*x+c)^n)))/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*
x)),x, algorithm="maxima")
```

```
[Out] A*(log(b*x + a)/((b*f - a*g)*h) - log(g*x + f)/((b*f - a*g)*h)) - B*integra
te(-(log((b*x + a)^n) - log((d*x + c)^n) + log(e))/(b*g*h*x^2 + a*f*h + (b*
f*h + a*g*h)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{A+B\,\ln\left(\frac{e\,{\left(a+b\,x\right)}^n}{{\left(c+d\,x\right)}^n}\right)}{h\,\left(a\,g\,x+b\,f\,x\right)+a\,f\,h+b\,g\,h\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/(h*(a*g*x + b*f*x) + a*f*h + b
*g*h*x^2),x)
```

```
[Out] int((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))/(h*(a*g*x + b*f*x) + a*f*h + b
*g*h*x^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((A+B*ln(e*(b*x+a)**n/((d*x+c)**n)))/(a*f*h+b*g*h*x**2+h*(a*g*x+b*
f*x)),x)
```

```
[Out] Timed out
```

3.262 $\int \frac{1}{(afh+bghx^2+h(bfx+agx))(A+B\log(e(a+bx)^n(c+dx)^{-n}))}\,dx$

Optimal. Leaf size=83

$$\frac{\text{Subst}\left(\text{Int}\left(\frac{1}{(a+bx)(f+gx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)},x\right),e\left(\frac{a+bx}{c+dx}\right)^n,e(a+bx)^n(c+dx)^{-n}\right)}{h}$$

```
[Out] _eval(Unintegrable(1/(b*x+a)/(g*x+f)/(A+B*ln(e*((b*x+a)/(d*x+c))^n)),x),e*(
(b*x+a)/(d*x+c))^n = e*(b*x+a)^n/((d*x+c)^n))/h
```

Rubi [A] time = 0.43, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(afh+bghx^2+h(bfx+agx))\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x)^n)/(
c + d*x)^n])),x]
```

```
[Out] (b*Defer[Int][1/((a + b*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])), x])/(
(b*f - a*g)*h) - (g*Defer[Int][1/((f + g*x)*(A + B*Log[(e*(a + b*x)^n)/(c +
 d*x)^n])), x])/((b*f - a*g)*h)
```

Rubi steps

$$\int \frac{1}{(afh+bghx^2+h(bfx+agx))\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\,dx = \int \frac{1}{h(a+bx)(f+gx)\left(A+B\log(e(\right.}$$

$$= \frac{\int \frac{1}{(a+bx)(f+gx)\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)}}{h}$$

$$= \frac{\int \left(\frac{b}{(bf-ag)(a+bx)\left(A+B\log(e(a+bx)^n(c+dx)^{-}\right.}\right.}{}$$

$$= \frac{b\int \frac{1}{(a+bx)\left(A+B\log(e(a+bx)^n(c+dx)^{-n})\right)}\,dx}{(bf-ag)h}$$

Mathematica [A] time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{1}{(afh+bghx^2+h(bfx+agx))\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x
)^n)/(c + d*x)^n])),x]
```

```
[Out] Integrate[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x
)^n)/(c + d*x)^n])), x]
```

fricas [A] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{Abghx^2 + Aafh + \left(Abf + Aag\right)hx + \left(Bbghx^2 + Bafh + \left(Bbf + Bag\right)hx\right)\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)
^n))),x, algorithm="fricas")
```

```
[Out] integral(1/(A*b*g*h*x^2 + A*a*f*h + (A*b*f + A*a*g)*h*x + (B*b*g*h*x^2 + B*
a*f*h + (B*b*f + B*a*g)*h*x)*log((b*x + a)^n*e/(d*x + c)^n)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(bghx^2 + afh + \left(bfx + agx\right)h\right)\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)
^n))),x, algorithm="giac")
```

```
[Out] integrate(1/((b*g*h*x^2 + a*f*h + (b*f*x + a*g*x)*h)*(B*log((b*x + a)^n*e/(
d*x + c)^n) + A)), x)
```

maple [A] time = 12.99, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(bgh\,x^2 + afh + \left(agx + bxf\right)h\right)\left(B\ln\left(e\left(bx + a\right)^n\left(dx + c\right)^{-n}\right) + A\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x
)
```

```
[Out] int(1/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n))),x
)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(bghx^2 + afh + \left(bfx + agx\right)h\right)\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)
^n))),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*g*h*x^2 + a*f*h + (b*f*x + a*g*x)*h)*(B*log((b*x + a)^n*e/(
d*x + c)^n) + A)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(A + B\,\ln\left(\frac{e\,(a+b\,x)^n}{(c+d\,x)^n}\right)\right)\,\left(h\,\left(a\,g\,x + b\,f\,x\right) + a\,f\,h + b\,g\,h\,x^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))*(h*(a*g*x + b*f*x) + a*f*h
+ b*g*h*x^2)),x)
```

```
[Out] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))*(h*(a*g*x + b*f*x) + a*f*h
+ b*g*h*x^2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*f*h+b*g*h*x**2+h*(a*g*x+b*f*x))/(A+B*ln(e*(b*x+a)**n/((d*x+c
)**n))),x)
```

```
[Out] Timed out
```

3.263 $\int \frac{1}{\left(afh+bghx^2+h(bfx+agx)\right)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}\,dx$

Optimal. Leaf size=83

$$\frac{\text{Subst}\left(\text{Int}\left(\frac{1}{(a+bx)(f+gx)\left(B\log\left(e\left(\frac{a+bx}{c+dx}\right)^n\right)+A\right)^2},x\right),e\left(\frac{a+bx}{c+dx}\right)^n,e(a+bx)^n(c+dx)^{-n}\right)}{h}$$

```
[Out] _eval(Unintegrable(1/(b*x+a)/(g*x+f)/(A+B*ln(e*((b*x+a)/(d*x+c))^n))^2,x),e
*((b*x+a)/(d*x+c))^n = e*(b*x+a)^n/((d*x+c)^n))/h
```

Rubi [A] time = 0.46, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(afh+bghx^2+h(bfx+agx)\right)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x)^n)/(
c + d*x)^n])^2),x]
```

```
[Out] (b*Defer[Int][1/((a + b*x)*(A + B*Log[(e*(a + b*x)^n)/(c + d*x)^n])^2), x])
/((b*f - a*g)*h) - (g*Defer[Int][1/((f + g*x)*(A + B*Log[(e*(a + b*x)^n)/(c
 + d*x)^n])^2), x])/((b*f - a*g)*h)
```

Rubi steps

$$\int \frac{1}{\left(afh+bghx^2+h(bfx+agx)\right)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}\,dx = \int \frac{1}{h(a+bx)(f+gx)\left(A+B\log\left(e(a\right.\right.}$$

$$= \frac{\int \frac{1}{(a+bx)(f+gx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}}{h}$$

$$= \frac{\int \left(\frac{b}{(bf-ag)(a+bx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)}\right.}{}$$

$$= \frac{b\int \frac{1}{(a+bx)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}\,dx}{(bf-ag)h}$$

Mathematica [A] time = 0.27, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(afh+bghx^2+h(bfx+agx)\right)\left(A+B\log\left(e(a+bx)^n(c+dx)^{-n}\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x
)^n)/(c + d*x)^n])^2),x]
```

```
[Out] Integrate[1/((a*f*h + b*g*h*x^2 + h*(b*f*x + a*g*x))*(A + B*Log[(e*(a + b*x
)^n)/(c + d*x)^n])^2), x]
```

fricas [A] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{A^2bghx^2 + A^2afh + \left(A^2bf + A^2ag\right)hx + \left(B^2bghx^2 + B^2afh + \left(B^2bf + B^2ag\right)hx\right)\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right)^2 + 2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)
^n)))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(A^2*b*g*h*x^2 + A^2*a*f*h + (A^2*b*f + A^2*a*g)*h*x + (B^2*b*g*
h*x^2 + B^2*a*f*h + (B^2*b*f + B^2*a*g)*h*x)*log((b*x + a)^n*e/(d*x + c)^n)
^2 + 2*(A*B*b*g*h*x^2 + A*B*a*f*h + (A*B*b*f + A*B*a*g)*h*x)*log((b*x + a)^
n*e/(d*x + c)^n)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(bghx^2 + afh + \left(bfx + agx\right)h\right)\left(B\log\left(\frac{(bx+a)^n e}{(dx+c)^n}\right) + A\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)
^n)))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((b*g*h*x^2 + a*f*h + (b*f*x + a*g*x)*h)*(B*log((b*x + a)^n*e/(
d*x + c)^n) + A)^2), x)
```

maple [A] time = 5.41, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(bgh\,x^2 + afh + \left(agx + bxf\right)h\right)\left(B\ln\left(e\,(bx+a)^n\,(dx+c)^{-n}\right) + A\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2
,x)
```

```
[Out] int(1/(b*g*h*x^2+a*f*h+(a*g*x+b*f*x)*h)/(A+B*ln(e*(b*x+a)^n/((d*x+c)^n)))^2
,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\left(df - cg\right)\int \frac{}{\left(bcf^2hn - adf^2hn\right)AB + \left(bcf^2hn\log(e) - adf^2hn\log(e)\right)B^2 + \left(\left(bcg^2hn - adg^2hn\right)AB + \left(bcg^2hn\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*f*h+b*g*h*x^2+h*(a*g*x+b*f*x))/(A+B*log(e*(b*x+a)^n/((d*x+c)
^n)))^2,x, algorithm="maxima")
```

```
[Out] (d*f - c*g)*integrate(1/((b*c*f^2*h*n - a*d*f^2*h*n)*A*B + (b*c*f^2*h*n*log
(e) - a*d*f^2*h*n*log(e))*B^2 + ((b*c*g^2*h*n - a*d*g^2*h*n)*A*B + (b*c*g^2
*h*n*log(e) - a*d*g^2*h*n*log(e))*B^2)*x^2 + 2*((b*c*f*g*h*n - a*d*f*g*h*n)
*A*B + (b*c*f*g*h*n*log(e) - a*d*f*g*h*n*log(e))*B^2)*x + ((b*c*g^2*h*n - a
*d*g^2*h*n)*B^2*x^2 + 2*(b*c*f*g*h*n - a*d*f*g*h*n)*B^2*x + (b*c*f^2*h*n -
a*d*f^2*h*n)*B^2)*log((b*x + a)^n) - ((b*c*g^2*h*n - a*d*g^2*h*n)*B^2*x^2 +
 2*(b*c*f*g*h*n - a*d*f*g*h*n)*B^2*x + (b*c*f^2*h*n - a*d*f^2*h*n)*B^2)*log
((d*x + c)^n)), x) - (d*x + c)/((b*c*f*h*n - a*d*f*h*n)*A*B + (b*c*f*h*n*lo
```

```
g(e) - a*d*f*h*n*log(e))*B^2 + ((b*c*g*h*n - a*d*g*h*n)*A*B + (b*c*g*h*n*lo
g(e) - a*d*g*h*n*log(e))*B^2)*x + ((b*c*g*h*n - a*d*g*h*n)*B^2*x + (b*c*f*h
*n - a*d*f*h*n)*B^2)*log((b*x + a)^n) - ((b*c*g*h*n - a*d*g*h*n)*B^2*x + (b
*c*f*h*n - a*d*f*h*n)*B^2)*log((d*x + c)^n))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\left(A+B\ln\left(\frac{e\,(a+b\,x)^n}{(c+d\,x)^n}\right)\right)^2\,\left(h\,\left(a\,g\,x+b\,f\,x\right)+a\,f\,h+b\,g\,h\,x^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2*(h*(a*g*x + b*f*x) + a*f*
h + b*g*h*x^2)),x)
```

```
[Out] int(1/((A + B*log((e*(a + b*x)^n)/(c + d*x)^n))^2*(h*(a*g*x + b*f*x) + a*f*
h + b*g*h*x^2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*f*h+b*g*h*x**2+h*(a*g*x+b*f*x))/(A+B*ln(e*(b*x+a)**n/((d*x+c
)**n)))**2,x)
```

```
[Out] Timed out
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*         GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
```

```
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]
```

```
AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.0.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
   debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
   ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
          print("ExpnType_result<=ExpnType_optimal");
      fi;
```

```
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            if debug then
               print("both result and optimal complex");
            fi;
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            if debug then
               print("result contains complex but optimal is not");
            fi;
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
           if debug then
               print("result do not contain complex, this assumes optimal do
   not as well");
           fi;
           if leaf_count_result<=2*leaf_count_optimal then
              if debug then
                 print("leaf_count_result<=2*leaf_count_optimal");
              fi;
              return "A";
           else
              if debug then
                 print("leaf_count_result>2*leaf_count_optimal");
              fi;
              return "B";
           end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      if debug then
         print("ExpnType(result) > ExpnType(optimal)");
      fi;
      return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
```

```
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:
```

```
AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]
```

```
def is_atom(expn):
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn
   )))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,
   ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or
   type(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,
   expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType
   ,Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9
```

```
#main function
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
   well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.0.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

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

def is_sqrt(expr):
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
```

```
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    debug=False
    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug=False
    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
   sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','
   hypergeometric_U']

def is_appell_function(func):
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in
   sagemath

def is_atom(expn):

    debug=False
    if debug: print ("Enter is_atom")


    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-
   sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
```

```
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens")
    :
            return expn in expn.parent().base_ring() or expn in expn.parent().
    gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],
    Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer
    )
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],
    Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],
    Rational)
                return 1
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(
    expn.args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()
    [1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #
    isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn
    .func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(
    expn.args)))
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): #
    is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
```

```
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, "
    leaf_count_optimal=",leaf_count_optimal)


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",
    expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
    well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```